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THE UNIVERSITY OF ALBERTA
A STUDY OF THE EFFECTS OF CERTAIN HOME PRACTICES ON
READING ACHIEVEMENT OF SECOND GRADE CHILDREN

by

HORACE VERNON LOWRY



A THESIS
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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "A Study of the Effects of Certain Home Practices on Reading Achievement of Second Grade Children" submitted by Horace Vernon Lowry in partial fulfilment of the requirements for the degree of Master of Education.

ABSTRACT

The purpose of this study was to ascertain the influence of certain home-centered, preschool experiences on the reading achievement of second-grade pupils. It was hoped that features rather unique to the home would be discovered, apart from the general socioeconomic factors usually associated with differences in social class.

The sample, originally comprising 339 pupils, and constituting all of the second-grade pupils in five Edmonton public schools, were selected to be representative of a broad range of socioeconomic status. The sample was subsequently reduced to 241 pupils, due to the failure of certain parents to respond to at least one of three questionnaires. Data concerning chronological age, mental age, sex, bilingualism, and socioeconomic status were collected. In addition, a questionnaire devised by the investigator was administered to the parents in an attempt to secure measures of each child's experience with language in the home, his general background of experience, and the availability and use of reading materials at home. The total Parent Questionnaire and each of its subsections constituted separate variables in the study. Pupil status in reading was measured by using the Gates Advanced Primary Reading Test.

Statistically significant correlations with reading were found for the total Parent Questionnaire, the Experience Questionnaire, and the Books Questionnaire, suggesting that the factors in question do make a difference in establishing readiness for reading. The fact that the Language Questionnaire did not correlate significantly with reading has at least two feasible explanations. It may be that this instrument afforded an inadequate measure of the aspects of linguistic experience which are pertinent to reading readiness. But it is more likely that certain items, due to the nature of their construction, failed to elicit true distinctions in the quantity of verbal dialogue between parents and children in the home. Other variables correlating even more highly with reading were mental age and socioeconomic status.

Analysis of the data utilizing multiple linear regression indicated that only the Language Questionnaire, bilingualism, mental age, and socioeconomic status were statistically significant predictors of reading achievement in the presence of the other variables, with the latter two making the greatest contribution. However, a battery of predictor variables, composed of the three Parent Questionnaire subtests combined, provided predictive power beyond that of any other combination of variables, including socioeconomic status, which does suggest a degree of unique-

ness in what the questionnaire measures. Relationships between reading and either chronological age or sex were not significant by either method of analysis. Possible reasons for any apparently discrepant results are included in the discussion.

Since the study suggests that the causes of reading disability can be and often are environmental, and since the child's early years are known to be crucial in preparing for academic success, it follows that intervention to help rectify the problem seems justified. Some suggestions are presented as to possible ways to proceed in this direction, as well as for further research. For example, children need direct adult guidance in order to reap the greatest benefit from their experiences in terms of educational preparation. Research is needed to determine the sorts of activities which are of greatest value in this respect.

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CHAPTER I

NATURE OF THE STUDY

I. THE PROBLEM

The failure of many capable children to achieve near their potential in reading portends for them rather unfortunate consequences, which probably could be averted, granted appropriately timed and executed preventative measures. Brief reference to the literature will attempt to contrast the merit in early intervention and the price of neglect.

Obviously, academic success presupposes an ability to read commensurate with the demands placed upon the student in certain subject areas. Adams, Gray and Reese (2, p. 77) concur in this view, and Shire (88, pp. 1,2) cites statistics to show that reading disability has been known to cause as high as twenty-five per cent of failures in the upper grades. Perhaps of equal importance is the serious personal and social maladjustment which so frequently is coincident with reading failure, as pointed out by Dolch (26, pp. 1-12).

Numerous writings, in recent years, attest to the mounting concern over the poverty of experience provided in many of our homes. According to Dechant (21, p. 34), the basis of all educational development, and of language and

reading development, is experience. From an increasing body of research, Worth (1966, pp. 13-16) cites evidence in support of six propositions, originated by Bloom, four of which have relevance to this study. First, certain characteristics (intelligence, for example) grow most rapidly in the early years. Second, during this rapid growth period, environmental conditions have their greatest impact on a characteristic. Third, it is difficult to alter or replace early learnings; and fourth, one's environment is a major determiner of school achievement.

Assuming these propositions to be valid, it follows that the quality of a child's early experiences is crucial to his success in subsequent schooling. To be more explicit, the child who suffers a disadvantage, where early life experiences are concerned, risks the inheritance of a decided educational handicap.

Bernstein (1966, pp. 288-314) emphasizes the role of general language skill in the realization of a child's educational potential. He suggests that partly because of divergent emphases being placed upon language, two distinct forms of language use arise from grossly different environments as a function of social class status. In short, he claims that the "formal" or "elaborated" language of the middle class is a more flexible and effective instrument

than the "public" or "restricted" language of the working class, in the sense that the former prepares one to profit from formal instruction, whereas, in general, the latter fails to do so. John and Goldstein (53, p. 271) concur in this view, and add that a deficient verbal environment in the lower-class home is probably more significant than is inadequate experience. Their deduction has merit, in that the use of language can be expected to lend depth and breadth of meaning to the concepts a child forms as the result of his experience. When the child, who is deprived of the opportunity for requisite experience and language development, first arrives at school, he encounters an unfamiliar environment in which it is difficult for him to achieve success.

II. PURPOSE OF THE STUDY

That relationships exist between inferior reading achievement and lower-class status, and between superior reading achievement and middle-class status is obvious and is adequately demonstrated in research (See Chapter II). The question then arises, to what extent are these findings a function of social class status per se, rather than a reflection of readiness for reading, as it emerges from the

home milieu?

With this question in mind, it becomes the purpose of this study to investigate the extent of the influence of certain types of verbal and experience deficits in the home, as factors somewhat separate and distinct from general social class differences, which may be presumed to inhibit a child's reading progress, and hence his academic achievement.

III. DEFINITION OF TERMS

For the purposes of this study, the following definitions were adopted:

Reading Achievement Reading achievement was defined as the level of a pupil's performance in reading as indicated by his total raw score on the Gates Advanced Primary Reading Test (Form 2).

Bilingualism Bilingualism was defined as the amount of use in the home of a language other than English. The score on the Hoffman Bilingual Schedule was used as the measure of bilingualism for this study.

Mental Age Mental age was defined as the level of a pupil's mental development. In this study it refers to the score, in months, derived from the results of the Detroit Beginners First Grade Intelligence Test.

Language Questionnaire The Language Questionnaire is the particular sub-section of the total Parent Questionnaire which indicated the extent of a preschool child's receptive and expressive language activities, including verbal dialogue with his parents or other adults.

Experience Questionnaire The Experience Questionnaire is the particular sub-section of the total Parent Questionnaire which enquired into the extent of such preschool activities as travel, visits to places of value in developing concepts, and use of materials which help to develop hand-eye coordination. All of these activities were presumed to help prepare the child to profit from instruction.

Books Questionnaire The Books Questionnaire is the particular subtest of the total Parent Questionnaire which attempted to measure the availability of appropriate books, magazines and newspapers in the home and the extent to which public library facilities were utilized. It includes the amount of actual reading undertaken during the first two years of school.

Socioeconomic Status The socioeconomic status of the family is defined as the score indicating its relative position on a continuum as determined by a combination of (1) possession or lack of possession of material goods (measured by Elley's modification of the Gough Home Index), and (2)

the father's occupation (measured by the Blishen Occupational Scale).

Second Grade Pupils This term refers to the children included in this study, whether or not they had begun to do work at the third grade level in the continuous progress plan. These children had attended school for approximately two years.

IV. STATEMENTS OF HYPOTHESES

1. There will be no significant correlations between the scores of the Gates Advanced Primary Reading Test (Form 2) and measures of the following variables:

- a) chronological age
- b) bilingualism
- c) sex
- d) mental age
- e) socioeconomic status
- f) total Parent Questionnaire
- g) Language Questionnaire
- h) Experience Questionnaire
- i) Books Questionnaire

2. There will be no significant contribution to the variance of scores on the Gates Advanced Primary Reading Test (Form 2) by the scores of the total Parent Question-

naire in the presence of socioeconomic status, bilingualism, mental age, chronological age and sex.

3. There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by the scores of the Language Questionnaire in the presence of Experience Questionnaire, Books Questionnaire, socioeconomic status, bilingualism, mental age, chronological age and sex.

4. There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by the scores of the Experience Questionnaire in the presence of Language Questionnaire, Books Questionnaire, socioeconomic status, bilingualism, mental age, chronological age and sex.

5. There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by the scores of the Books Questionnaire in the presence of Language Questionnaire, Experience Questionnaire, socioeconomic status, bilingualism, chronological age and sex.

6. There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by the scores of:

a) socioeconomic status

- b) bilingualism
- c) mental age
- d) chronological age, and
- e) sex

separately, and in turn, in the presence of the total Parent Questionnaire and the other variables listed, except as restricted one at a time.

7. There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by each of the scores of the total Parent Questionnaire, and its subtests, language, experience and books, separately, in the presence of socioeconomic status, bilingualism and mental age only.

8. There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by the scores of each of socioeconomic status, bilingualism and mental age, separately, in the presence of each other (except as restricted) and the total Parent Questionnaire.

9. There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by the scores of the three questionnaire subtests, language, experience and books, as a triad of separate predictor variables combined, over and above

that of the total Parent Questionnaire scores in the presence of mental age, bilingualism, socioeconomic status, chronological age and sex.

10. There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by the scores of the three questionnaire subtests, language, experience, and books, as a triad of separate variables combined, over and above that of the total Parent Questionnaire scores in the presence of:

- a) mental age, bilingualism and socioeconomic status
- b) mental age alone
- c) bilingualism alone, and
- d) socioeconomic status alone.

V. DESIGN OF THE STUDY

Data used in this study were obtained from a sample of 241 students who were finishing their second year of schooling in five public schools in the city of Edmonton, Alberta. The sample originally included all of the 339 students from these schools at this grade level. However, due to family mobility and the failure of certain parents to respond to one or more of the three questionnaires

administered, the number of subjects was reduced to the figure first quoted, which is seventy-one per cent of the original group. The schools were selected, with the assistance of school board officials, to encompass a broad range of socioeconomic status, thus meeting a fundamental requirement of this study.

Measures were obtained on the following variables:

1. chronological age in months (from the cumulative records)
2. mental age in months (from the cumulative records, derived from the scores of the Detroit Beginning First Grade Intelligence Test);
3. bilingualism (determined by means of the Hoffman Bilingual Schedule which was administered to the parents);
4. sex
5. socioeconomic level of the pupil's families (by combining the scores of the Blishen Occupational Class Scale, and the Gough Home Index Scale, as modified by Elley, in equal weights);
6. reading achievement (from the total scores of the Gates Advanced Primary Reading Test -- Form 2);

7. a questionnaire prepared by the investigator, and designed to secure a measure on the following factors in the student's home environment:
language experience, general background experience, and the availability and use of reading materials.

The statistical analysis of the data for this study, made at the computing centre, Division of Educational Research Services, Faculty of Education, University of Alberta, utilized a statistical technique known as Applied Multiple Linear Regression Analysis, developed by Bottenberg and Ward, to test the hypotheses.

VI. LIMITATIONS OF THE STUDY

A random selection of the sample was not feasible due to restrictions on the availability of schools in the Edmonton Public School System, which accommodates a large number of researchers. However, as previously stated, the selection of schools provided for inclusion of subjects within a broad range of socioeconomic status, which satisfied a basic requirement in this study, and thus compensated, hopefully, to a degree, for the lack of randomness.

In the final analysis, the participants in this

study constituted seventy-one per cent of the original sample, which introduced the distinct possibility of bias. Moreover, the nature and composition of the non-respondents evaded easy detection. Many moved, and could not be located, while others simply refused or neglected to respond.

The possibility of bias existing through factors such as apathy, faulty memory, subjective judgement or deliberate misrepresentation to avoid casting unfavourable reflection upon oneself, is acknowledged as a limitation of the questionnaire technique. Its use is defended in the absence of knowledge of a more efficient means of securing the data sought from large numbers of parents.

Those items included in the Language Questionnaire attempted to measure the quantity, not the quality, of language used in the home. While it is admitted, readily, that the quality of language used is also important, its measurement was not within the scope of this investigation.

Finally, it is acknowledged that a host of other factors, which may influence reading, such as, physiological and neurological anomalies, emotional climate in the home, motivation, level of aspiration (of the child, and of the parent for the child), teaching materials, teaching methods and effectiveness, size of the family and position of the child in the family were not statistically controlled

in this study. Perhaps one could argue that the relatively large size of the sample would tend to offset biases of this nature, in that the likelihood of approaching a normal distribution, where such matters are concerned, is increased.

VII. SIGNIFICANCE OF THE STUDY

Should the effects of the language and experience deficits under investigation be found to cross social class lines to a considerable degree, then, it seems, an awareness of this fact would be a more effective tool in combatting public and political apathy and complacency than would merely regarding this problem as one peculiar to the lower-class minority.

Undoubtedly, many parents are unaware of the need for background experience in preparing their children to profit from instruction in reading. Logically enough, inaction accompanies ignorance. The results of this study could conceivably contribute to such an awareness.

It is assumed that to be handicapped in the cultivation of certain skills in the early preschool years means to be inhibited in achieving one's potential. Should this study, then, identify certain conditions in the child's early years which are shown to impede his

acquisition of these skills, then yet another possible contribution of this study could be that of helping to make more feasible the early identification of certain types of potential reading disability cases, culturally generated. The chief benefit here, of course, would be that of prevention rather than remedy.

The gravity of the whole matter of reading difficulty prompted Gate's sobering conclusion that, "Failure in reading is as serious in its consequences to children as financial or marital failure is to adults." (2, p. 76) This being so, it would appear urgent to examine every potential source of reading deficiency in quest of means to prevent its continued occurrence.

VIII. ORGANIZATION OF THE THESIS

The present chapter has attempted to outline the problem under investigation, establish the purpose of the study, define the terms to be used, state the hypotheses, outline briefly the design of the study, state some of the limitations of the study and point out the significance of the study.

The remainder of the thesis was organized as follows:

Chapter II: Review of Related Literature

Chapter III: The Experimental Design

Chapter IV: Results and Analysis

Chapter V: Summary, Conclusions, Implications and
Suggestions for Further Research.

CHAPTER II

REVIEW OF RELATED LITERATURE

The first section of this chapter attempts to show the interrelationships of the language arts in order to illustrate the dependence of reading facility upon general language competence. An effort is then made to outline the facilitating role of language in thought, thus linking reading efficiency with both language and cognitive activity. Then, through logic, and by reference to the literature, an attempt is made to justify the inclusion of all items on the total Parent Questionnaire within the scope of three general dimensions: use of language in the home, general environmental experience, and exposure to varied reading materials. A discussion then ensues, based on other variables used in the study, as they relate to the present investigation. The following variables are included: socioeconomic status, intellectual ability, bilingualism and sex.

I. LANGUAGE DEVELOPMENT

Since general language growth is a recognized factor in reading readiness it will be the focus of considerable attention.

Language Arts Inter-Related

Many authorities and researchers agree that there is a close relationship among the language arts, namely, listening, speaking, reading and writing. The logic in these assumptions is obvious, in that the purpose of language is communication, and that each of these facets of language is utilized either in the receptive or the expressive aspect of communication. Similar thought processes are involved in each.

Dechant (21, p. 87) states that a child's proficiency in speaking and listening is the best indicator of his readiness for reading. Robinson (79, p. 169) and Smith (92, pp. 3-10) substantiate Dechant's claim. Shire's (88, p. 125) extreme groups in reading achievement were markedly different in terms of several language variables ($P < .01$). She concluded that it is an inversion of the process to attempt to teach a child to interpret abstract printed symbols before he has acquired the necessary oral language to do so (88, p. 4). Her findings receive firm support in those of Loban (65, pp. 27, 69, 71, 75 and 85). In a report on the first seven years of a longitudinal study of language development from kindergarten through high school involving 338 students, Loban cites evidence to support the postulate that a close relationship does

exist among the language arts. In general, those students who were high in one of these areas were also high in others. For example, the pupils who excelled in general oral language ability also achieved well in reading ability. Strickland (96, p. 73) found that children who scored low in reading comprehension and listening skill used a larger proportion of short utterances in their language sample than did the high scorers, and Monk (70, p. 169) learned that superior readers tend to be superior writers.

Although, as Shire (88, p. 154) points out, the level of language development is not reputed to be an infallible index of success in learning to read, it would appear rather pointless to attempt to teach a child to read who has not achieved the requisite facility with conversational language.

Language in Thought

As previously suggested, reading, being one aspect of communication, is a thinking process. Logically, then, the efficiency of reading, at least from this standpoint, derives largely from the level of cognitive efficiency already established through previous facility with language in thought.

To further substantiate the importance of language in cognition, reference is now made to the writings of various authorities in the field.

Russell (82, p. 35) argues that, although young children are deficient in background of information, and though their thinking may be coloured by emotional and autistic factors, yet their capability in problem solving and imagination is evident long before age six. In fact, the mental development and actual formation of concepts during the preschool period can only be described as enormous (82, p. 35), subject, of course, to the child's background of experience (82, pp. 162, 163). But Russell's (82, p. 23) chief emphasis is on the role symbols play in all types of thinking. Although he concedes that symbols may be some sort of image or percept based on the memory of visual, auditory, tactile or other sensations, and that some thought appears to be based rather directly on this type of symbol (82, pp. 23, 25), yet the most frequent and helpful images in thinking, he suggests, are probably those connected with verbal symbols (82, p. 24). Thus, while rejecting the view of certain psychologists that language and thought are identical, because, for example, animals learn, and children think and understand long before they can use language, Russell does allude to the very close relationship

between the two, thus, giving language a place of pre-eminence in thought.

Jensen's (48, p. 136) thinking further illuminates the matter. He links the child's ability to utilize language covertly in thought (verbal mediation), and hence in problem solving and concept formation, with his facility in using language in overt expression. Jensen further suggests that such linguistic proficiency is dependent upon adequate and appropriate dialogue with mature language models.

Bernstein (6, pp. 288-314) views a child's language development as involving for him a loss or an acquisition of skills which are strategic for educational success, but he envisages two distinctive linguistic forms as being culturally determined. That is, differences in social class status account for discrepant language usage. Typically, Bernstein suggests, the middle class language is used to elaborate, clarify, and make meaning explicit. Through corrective verbal feedback and elaboration and expansion of the child's embryonic statements, his awareness is amplified and the concepts which he forms through his experiences are sharpened and made more precise, which, in turn, helps to prepare him to profit from formal instruction in the language of the school.

Conversely, Bernstein postulates, the typical language of the lower working-class fails to facilitate the communication of ideas which require precise formulation, thus imposing upon the individual, who is restricted to the use of this mode of speech, the unfortunate prospect of academic failure.

Bernstein's basic premise that language development makes a difference to one's preparedness to profit from instruction is in harmony with that of others who specialize in the field. Corrective verbal feedback by mature speakers, then, becomes crucial in his view, as well.

John and Goldstein (53, pp. 266-275) draw an astute comparison between two distinct stages in early learning. Being careful not to under-rate the period of pre-verbal learning, during which time, they suggest, a child integrates information acquired from the various senses, and also learns to comprehend speech, yet they laud the stage when verbal learning increasingly takes control of the learning process. Verbal learning, they argue, makes more rapid learning possible and facilitates the retention and transfer of that learned. Moreover, they contend, in learning multiple word meanings and categories, so vital in cognitive growth and concept formation, the child has to make generalizations and discriminations, the breadth and pre-

cision of which, respectively, is determined by the quality and quantity of the adult's verbal feedback. In other words, they too refer to this complex acquisition of language as being proportional to the scope of a child's verbal interaction with those charged with his care.

Piaget, as reported by Berlyne (4, pp. 1, 2), has found that during a child's first stage of development, which he terms the period of sensori-motor intelligence (birth to two years), the child advances toward the highest degree of intelligence that is possible without language and other symbolic functions. However, Piaget discovered that, in successive stages of development (preconceptual thought -- two to four years, and intuitive thought -- four to seven years), any gains obtained during the sensori-motor period are dwarfed by the prospects for achievement introduced by the use of signs and symbols, in particular, words and images.

In addition to their emphasis upon the early years as being crucial in the child's development and preparation for subsequent formal instruction, each of these thinkers, in his own way, lends substance to the value of linguistic competence as a facilitating means to this same end. Competence in reading, it being a receptive language process, cannot logically supersede general linguistic capability. Hence the emphasis on language in this exposition.

II. THE LANGUAGE QUESTIONNAIRE

The major portion of the total Parent Questionnaire utilized in this study is devoted to an inquiry into the use of language in the home. Since considerable attention has been given to the role of language in reading, an attempt will now be made to justify the inclusion of the items in the questionnaire. The intention of these items, in combination, is to afford a type of index of the quantitative aspects of language use in the home.

The investigator concedes, as McCarthy (67, p. 167) indicates, that purely quantitative measures of language (amount of speech) may be less satisfactory as a developmental index than the most qualitative aspects.

Raph (78, p. 369) observes that a meagerness of quantity and quality of verbal expression serves to depress intellectual functioning as children grow older. To illustrate the importance of quantity of language, however, both Bossard (10, p. 229) and Shire (88, p. 130) find that the total number of words a child can use correctly is significantly related to reading achievement and to academic success, particularly in the earlier years. Bossard (10, p. 229) adds that the child learns about the world through words. In fact, he continues, if the child's grasp

of words is inadequate, his interpretation of the world is faulty or incomplete to the same extent. In an experiment with dolls, Jensen (48, p. 136) showed dolls to children aged twenty months fifteen hundred times each. To one group three different statements were made, while another group heard thirty separate statements. In terms of ability to select dolls from among objects spread on the table, the group which received the more extensive verbal stimulation was far superior.

Mealtime

In our society, typically beset with feverish activity that tends to pull the family apart, it seems self-evident that one of the richest opportunities for family discussion is at the table, one of the few times the family can be together. All too often one or both parents are absent, even during family meals. Because of the opportunity for verbal dialogue during this time, the first three items of the Parent Questionnaire (see Appendix A) relate to the family meal.

Keller (57, p. 826) sees the family meal as the focus for emotional and cultural, as well as educational, experience. In addition, she adds, it subtly determines a set of complex attitudes and feelings about the use of

language.

A study by Milner (69, p. 105) showed that significantly more mothers of high scorers than of low scorers in reading indicate that on most days, the whole family eats breakfast together, and that the parents have a two-way conversation with their children, and/or permit them to prattle. The converse is indicated by the mothers of low scorers. These findings are in harmony with those of Yokley (109, p. 38), who reports that ninety-three per cent of her good readers, as compared with forty-seven per cent of the poor readers engage in free conversation at mealtime.

Milner (69, p. 109) discovered that some of the low scorers' mothers discourage or even prohibit children's chatter at the table. One mother considered this to be a "bad" practice. Bossard (10, pp. 228, 229) found a similar situation, in that, children are often admonished to be quiet and let their elders speak. Their participation is ridiculed or dismissed as prattle.

Verbal Interaction -- General

Certainly many opportunities for verbal dialogue present themselves other than at mealtime. Six of the items on the Parent Questionnaire are concerned with the extent to

which these opportunities are exploited.

Since much attention has been given previously to the importance of verbal interaction and corrective feedback in the growth of language and verbal mediation, only one further reference will be cited at this point. John (52, p. 815) notes that corrective feedback offered to the much-listened-to child, gives him an opportunity to experiment with the strategies of language behaviour. Thus, the child reared in a verbally rich environment, surrounded by adults who are responsive to his speech, can learn while young to internalize the role of speaker as well as listener. Emphasis is given here to the expressive, as well as the receptive aspect of language acquisition.

Listening. The remaining items on the Language Questionnaire, are related more specifically to the receptive aspect of language acquisition, and attempt to measure it in a variety of ways. Included are items numbered seven, eight, ten and sixteen.

In order to learn the spoken language, listening is indispensable. As noted by John and Goldstein (53, p. 267), language acquisition cannot be achieved in an interpersonal vacuum. Bossard (10, p. 227) also observes that words and language are acquired by ear. Extending his thinking,

Dechant (21, p. 96) adds that listening provides the vocabulary and sentence structure which serves as a foundation for reading. He reasons that the words and sentences most easily read and understood are those that have been heard and spoken (21, p. 104).

Listening to stories in the child's early years, whether by telling or reading, constitutes a notable means of acquiring a knowledge of words and sentence structures. Keshian's study (59, p. 616) of seventy-two fifth-graders selected at random from three hundred and sixty-two successful readers revealed that all of them had been read to, by their parents, on a regular, sustained basis throughout their early childhood. Both Milner (69, pp. 100, 107) and Yokley (109, pp. 88, 145) found similar results, in that their high scorers in reading, significantly more frequently than the low scorers, were habitually read to by their parents. This activity, they observed, constituted a portion of a much richer verbal environment than was enjoyed by the low scorers. On the other side of the coin, Osborn (74, p. 101) discovered that many of the problem cases in reading, which he had observed in project "Head Start", had never had a book read to them.

Utilization of our communication media is another possibility for exploitation in the receptive aspect of

language acquisition. Yokley (109, p. 26) reports that more families of good readers listened to records, radio and television programs together. All of her good readers watched television shows daily, as compared to fifty-three per cent of the poor readers. But the successful readers listened more often to programs designed for children (109, p. 96), and perhaps more importantly, the families of the good readers discussed television programs, among many other things, at the table more frequently than did those of the poor readers (109, p. 38). However, there appears to be a point of diminishing return, in Yokley's findings, in that many of the families of poor readers listened to the radio and watched television for much longer periods of time than did those of the good readers (109, p. 46). Perhaps this became more of a passive listening experience when used to excess, and/or it may have substituted for other rich verbal exchange. Or perhaps the type of program is a crucial factor.

III. THE EXPERIENCE QUESTIONNAIRE

The worth of experience as a foundation for further learning is scarcely disputable, and evidence is mounting to show that its value is amplified when obtained in the early years. Jensen (48, p. 133) lends support to the

"Critical Years" hypothesis of Worth (106, pp. 13-16) in asserting that, according to our present knowledge of the development of a child's learning abilities, the preschool years are the most important years in a child's life. During these "critical" years an immense amount of development and learning occurs.

In Stauffer's view, "The everyday concepts and words a child brings with him to school are roughed and hewed from experience of the face-to-face variety." (95, p. 102). Dechant (21, p. 34) agrees that experience is the foundation of all educational development, and that a rich background of experience prepares the child to attack the printed page, that is, it equips him to react with meaning to what he reads. As Dechant (21, p. 128) points out, without experience the child has nothing on which to base learning.

Muscle Coordination

Some experiences involve the coordination of muscles, such as those controlling the hand and eye, in preparation for some of the finer physiological responses which are required in reading and other initial learning activities. Items numbered eleven and fifteen are concerned with this aspect of experience.

Gordon (39, p. 377) states that socially disadvantaged

children lack many cultural artifacts generally associated with school readiness, such as books, art supplies and a variety of toys. Tomlinson (98, p. 279) reports that lower-class children seldom have materials such as pencils, crayons, paper and scissors which provide activities for developing the finer finger muscle skills. Osborn (74, p. 101), in assessing children who participated in project "Head Start", learned that nearly all of these children first used crayons, paints and other child-oriented facilities while in this program.

In an experiment reported by Jensen (64, p. 136), one group of children was shown objects repeatedly while they were named. Another group was given the objects to handle while they were named. Although the total number of experiences was the same for both groups, those who handled the objects were reported to have learned more and more rapidly. Apparently learning was facilitated through kinesthetic-sensory experience.

Other physical activities also involve the mental processes in a rather direct way. Some of the results of the Yokley study (109, p. 125) suggest that the recreational activities of the good readers are more varied than those of the poor readers. Among the activities which seemed to discriminate between good and poor readers were such things

as card games and checkers.

Excursions and Travel

Of all the types of experience a youngster could encounter, one would expect those associated with travel, excursions, trips, visits and the like to be most broadening. This is not to disvalue one's locale, whatever it be, as a source of environmental experience, but to claim it to be restrictive within the scope of otherwise available experiences. This facet of experience is probably most highly dependent upon the family economy, and hence, closely allied with socioeconomic status. The twelfth and thirteenth items inquire into the matter.

In the Milner study (69, p. 100), the high scorers in reading significantly more frequently than the low scorers, expressed appreciation for the time their parents spent taking them places. Yokley (109, pp. 26, 80, 124) notes that all of the good readers involved in her study took trips with their parents to a variety of places, and the majority of these parents solicited the help of their children in planning vacations and family recreation together. Only seventy-one per cent of the poor readers went on trips with their parents, and twenty-four per cent went sightseeing, shopping or to see a circus.

According to Osborn (74, p. 101), nearly all of the project "Head Start" subjects made their first visits to places such as the zoo, supermarkets or fire stations, activities which are taken for granted by many middle-class children. McCarthy (67, p. 170) claims that increases in children's vocabularies are almost always associated with travel and other broadening environmental experiences. Dechant (21, pp. 34, 128) adds that children given a variety of such opportunities have far greater potential for developing concepts, word knowledge and general background of meaning to enable them to understand what they read. In support of Dechant's assertion, Smith (93, p. 163) reports that, from a study involving a first grade class, a total of two hundred and four concepts emerged from nine excursions undertaken at the beginning of the year. There was found to be a positive correlation between the concept supply resulting from excursions and the vocabulary demands of primary reading.

Language and Experience

Dechant's (21, p. 34) contention that experience is the basis of all educational development appears to be well founded, judging by the foregoing discussion. To expand on his thinking, it could be deduced that language lends

meaning to experience, and hence, invests the concepts acquired with breadth and depth, and, in turn, provides a better foundation for success in reading.

Olsen (72, p. 284) affirms that language does grow out of experience. Whether it does, however, would appear to be conditional upon the circumstances. If, as Brunner (13, p. 106) suggests, children are helped to name accurately the objects, feelings or actions associated with their experiences, and learn words to describe them, then Olsen's assumption would appear to be correct. As pointed out by Tomlinson (98, pp. 281, 282), however, many children having had ample experience, particularly those in lower-class homes, have neither the skill nor the interest to put them on a verbal level. This is even true, she adds, in settling disputes (often referred to as the cradle of language growth) with their fists. Often not a word is spoken. To further illustrate, objects such as articles of clothing are often called "things".

With this in mind, perhaps one could safely conclude, with John and Goldstein (53, p. 70), that inadequate verbal interaction, rather than poverty of experience, may explain more simply the slower rate of language acquisition by lower-class students. One might infer further that the same could be true of any home characterized by a dearth

of language, irrespective of social class.

IV. THE BOOKS QUESTIONNAIRE

Reading Material at Home

Items numbered seventeen through twenty inquire into home ownership of books, magazines and newspapers. Ample attention is given to this matter in the literature.

According to Dechant (21, p. 34), children who have experience with books and magazines tend to develop interest in reading and are generally proficient at it. The cultivation of such interest is much less probable, one might conjecture, where these materials are absent. Keshian's study (59, p. 652) supports Dechant's stand, in that his successful readers characteristically have access to a great variety of reading materials in the home. Their parents subscribed to more magazines and newspapers than did those of the poor readers. Twelve per cent of the successful readers were members of book clubs, and seventy-six per cent owned at least one subscription to a magazine for children. A similar result emerges from a study by Sheldon and Cutts (86, p. 265). They found a consistent trend in their sample. As the number of books in the home increased, so did the percentage

of good readers, while the percentage of average and poor readers diminished. Almost identical results are revealed in Milner's study (69, p. 100).

Yokley (109, pp. 35, 85, 88, 90) releases specific figures. The good readers in her sample had access to more books and newspapers at home than did the poor readers. To be specific, forty per cent of the good readers had more than fifty books at home, as compared with the poor readers, fifty-nine per cent of whom owned five books or less, and none of whom owned more than fifty books, while a larger proportion of good readers had books of their own, twenty per cent of them owned no books as compared with forty per cent of the poor readers. It is interesting to note that the comics were more favoured by the good readers. It appears that they read more of everything.

Exceptions granted, the evidence consistently indicates a positive correlation between home ownership of reading materials and successful reading achievement.

Family Reading Habits

As suggested both by Dechant (21, p. 72) and by Duker and Nally (27, p. 22), since young children typically are imitators, the obvious value accruing to those who frequently observe their parents read is that of emulation.

Moreover, as the child himself reads, he secures through practice the skills which he has been taught at school. At the same time, his interests expand, and his growth in word knowledge and information prepare him for more advanced reading. The twenty-first and twenty-second questionnaire items are concerned with the reading habits of parents and children.

Keshian (59, p. 616) found that the parents of the successful readers in his study stimulated their children to read by giving them books as gifts and by reading themselves. Yokley (109, p.35) learned that the parents of her good readers spent much more time reading a wider variety of material.

A second study by Sheldon and Cutts (87, p. 519) indicates that about one-half of the above average and superior readers in their sample had reading as an out-of-school hobby, while the same was true of only one-quarter of the average readers and one-tenth of the poor readers. A similar finding is reported by Yokley (109, p. 35).

Public Library

Whether or not a child has books at home, the public library is available as an excellent source of reading material. One could speculate that owning and using a

library card has considerable merit. It is admitted, however, that home ownership of ample, varied books and other reading materials probably offers a greater advantage because of their immediate availability and due to the enticement induced when these materials are ever in the child's view. The twenty-third questionnaire item deals with the matter of libraries.

Duker and Nally (27, p. 23) reason that a parent who browses with his child in the library promotes his interest in books. Keshian (59, p. 616) supports this view in reporting that most of the successful readers in his study owned and used library cards despite the relative inaccessibility of the library. This condition was enhanced, in many cases, by interested parents, who accompanied their children to the library, and otherwise encouraged them to use its facilities.

The one remaining questionnaire item not accounted for is the twenty-fourth, which inquires as to whether a child reads aloud to his parents. Its inclusion can be defended on the grounds that value accrues through practice, particularly since oral reading holds a position of pre-eminence during the first two years, and because of the interest shown by parents in taking the time to listen.

A Comment

All in all, the inclusion of each item in the questionnaire appears justifiable, in that, together, they attempt to measure dimensions which are shown in the literature to be relevant and pertinent. The validity of what the particular combination of items in this instrument reveals, then, in predicting success in reading, should basically be limited only by inaccuracy in the answers, or by failure of the instrument to measure adequately what it was intended to measure.

V. SOCIOECONOMIC STATUS

The impact of social status upon the individual, and upon his outlook and his prospects for educational advancement is not questioned, in general. Yet the findings are not entirely consistent, and points of view on the matter differ, albeit, each is backed by logic.

Deprivation -- Viewpoints

The literature is replete with descriptions of children classed as culturally "deprived", "disadvantaged" or "underprivileged". Unfortunately, according to a number of authorities, these terms have come to mean different

things to different people as the ensuing discussion will illustrate.

Fisher (32, pp. 285, 286) denounces the use of these labels as inappropriate and gross oversimplifications, which tend to engender stereotyped notions about a particular subculture. He contends that no one can be deprived of a culture, and, in fact, that educators are probably "deprived" in their understanding of certain minority groups. The net result, he claims, is the failure of the school to adjust adequately to the individual needs of this group. Gordon (39, p. 385) concurs, in that research tends to generalize on a population which, in all probability, is infinitely variable. He argues that there is likely no typical socially disadvantaged youth, that differential psychology applies as aptly to minority groups as elsewhere.

Olsen (72, p. 281) hastens to point out that not all middle-class children have the advantages attributed to them, except perhaps in the upper bracket of the class. Congreve (19, pp. 15, 16) argues that disadvantage can and does arise from conditions more profound than economic ones. He emphasizes the role of one's self-concept, which, he claims, emerges from one's peculiar environment and experience. In his experience, excellent self-concepts are formed in children of some of the poorest families, while some

frightfully unfortunate self-images are cast in children of some of the richest families. Fisher (32, pp. 286, 287) adds that large numbers of tense and anxious children live in the suburbs, which he interprets as an indication that the handicaps of the so-called underprivileged are relative. He feels that we tend to overlook the available sources of support, love and encouragement to these children from inlaws and friends, and he supports the stand taken by Congreve in stating that underprivileged and privileged children alike are to be found in both social settings. He cautions us not to overlook the cultural opportunities and challenges offered in any neighborhood.

By way of definition, Fisher (32, pp. 289, 290) suggests that the most accurate, and least offensive term to use in behalf of these minority groups is poverty, a term which probably pinpoints the one thing they all have in common. However, he admits that this says little by way of description, in that the children and their home conditions differ extensively from each other. Brunner (13, p. 104) contends that poverty reduces the number of "things" available to be named, handled and classified. These "things" she refers to as the "raw materials of knowledge". Yokley (109, p. 144), on the other hand, takes the view that this lack of materials may not be due to poverty. Many of

the poorest homes included in her study contained radios, television sets, washing machines and even automobiles. It would appear that the purchases of many such parents are governed by a set of priorities based not only on the demands of necessity, but, from the standpoint of educational preparation, at least, on an inappropriate set of criteria.

In response to the accusation of anti-intellectualism, which is not infrequently levelled against the lower-class minority, Gordon (39, p. 378) counters that this condition pervades present day America, and that there is considerable evidence that many lower-class parents are concerned about education for their children. Many of these parents, he adds, can still provide stimulating environments for their children, even though restricted in educational attainment. Congreve (19, p. 17) holds to the same view, but admits that there probably are disadvantaged poor who would not become advantaged by simply gaining wealth.

Some insight into the reasons for the charge of anti-intellectualism is furnished by two separate writers. Fisher (32, pp. 287, 288) suggests that many of the supposedly "disadvantaged" children sustain handicaps in trying to make sense out of the education offered. He feels that they are not challenged by seemingly meaningless tasks, nor motivated by rewards that make no sense to them.

Olsen (72, pp. 281, 282) largely blames institutional factors for the silence of these young students, and he charges educators to pinpoint the causes. He observes that many of them have full language development in areas not valued by the school. Hence, he maintains, they are silent because their experience is irrelevant, and adds that the question-answer technique only aggravates the situation.

The one thing which seems to stand out most clearly in the foregoing discussion is, that attaching blanket labels to the children of the urban poor probably obscures more differences than it reveals, and therefore lends no impetus to solving the problems which, in fact, do exist, although by no means solely within this group. It remains to return to the research for further clarification.

Research

Of the studies to be referred to, only that by Keshian (59, p. 616) disclosed no apparent significant relationship between reading achievement and socioeconomic status.

Schulman and Havighurst (83, pp. 440, 441) in studying students of the ninth and tenth grades, in a small mid-western community, found a consistently positive correlation between knowledge of vocabulary and socioeconomic status

($r=.46$). In fact, the higher the level of social status, the greater the average vocabulary size. This finding should be interpreted in the light of the size of the community. The chance for extreme discrepancies in social status is probably reduced in the smaller communities.

Milner (69, p. 107) was so confident in the high positive relationship shown in her study between reading achievement and social class status, that she felt justified in stating emphatically that the mothers of the high scorers in reading were, in fact, middle class mothers, while those of the low scorers in reading were almost exclusively lower-class mothers.

Yokley (109, p. 21) reported that in her study of primary pupils achieving in the highest and lowest deciles in reading, students from middle-class homes constituted ninety-three per cent of the good readers and only eighteen per cent of the poor readers. However, her sample was small, and only opposite extremes in reading achievement were included, thus ignoring the full continuum of scores between the two extremes, which attenuates her findings.

Deutsch (25, pp. 80, 84, 86) in his study of lower-class Negro and white subjects, found that reading achievement was among the variables related to socioeconomic status. The general deterioration of achievement by the

fifth grade led Deutsch to postulate that these particular lower-class youngsters are subject to a "cumulative deficit phenomenon". That is, when four years of ineffectual schooling are added to a poor home environment, the end result is a group of children who are even less capable of handling standard intellectual and linguistic tasks. Bernstein's study of teenagers (5, p. 275) showed that socioeconomic status did make a difference, at least in his sample. For the working-class group, the language scores were depressed in relation to the scores on the higher ranges of a non-verbal intelligence test. This relationship was found not to be true of the public school group. The difference between the overall mean vocabulary scores for the two groups was over twice the size of the difference between the means of the non-verbal intelligence test scores. These findings seem to support the cumulative deficit hypothesis formulated by Deutsch.

The evidence that socioeconomic status does influence academic achievement appears almost to be overwhelming. Yet this inference must be qualified. The results of these studies do not really nullify the postulates of the theorists cited previously. Essentially, these theorists are saying that, while mean differences do, in fact, exist, widely variable achievement is as much a

fact of life among minority group children as elsewhere. As noted by Deutsch (23, p. 131), reliance upon group mean scores, and upon norms which are established on the entire spectrum of a populace, tends to obscure the variability, and hence to under-rate the potential within the minority group. He suggests that the establishment of separate norms for the minority group would be advisable.

VI. INTELLECTUAL ABILITY

When speaking of correlations between intelligence scores and reading performance, it is important to know the type of instrument used. For example, as Vernon (100, p. 75) points out, the non-verbal intelligence tests have lower coefficients of correlation with performance in reading than do the verbal intelligence tests, since performance on the latter is generally dependent upon the ability to read.

Dechant (21, p. 40) contends that a measure of mental age is a better indicator of reading readiness and achievement than is the intelligence quotient, especially at early levels, simply because the ability to read requires many skills which come only with age. Correlations between intelligence quotients and reading ability, he adds, vary

from .35 in the first grade to .65 in the sixth grade. Dechant interprets this as being significant, in that it implies that intelligence is more of a determinant of reading success in later than in earlier grades. Vernon (100, p. 77) cites evidence from research to indicate that the opposite is true. He reasons that as children grow older, and usually more skilled in reading, then intelligence becomes less important. Dechant's position seems more plausible, however, since the more advanced the reading skills involved, the higher the mental competence required to cope with reading.

Curry's study (20, pp. 46-49) involved three hundred and sixty sixth graders selected at random from thirty-three elementary schools. He compared the achievement scores of students having high, medium and low intelligence quotients with an index of their socioeconomic status level. He found that social conditions seem to have no effect on the achievement of students within the high ability range. Language was affected adversely by low social class status for the medium ability group, while both language and reading achievement were so influenced in the low ability group. In general, Curry found that as intellectual ability decreases from high to low, the adverse effect of poor socioeconomic conditions increases greatly. High intelligence seems to offset any environmental and economic

deficits, at least at this grade level.

Shire (88, pp. 38-40, 103, 153) studied three hundred first graders in four parochial schools. The results of the multiple correlations indicated that intelligence was the highest variable in predicting reading achievement, while certain language factors were next. The correlation between mental age and reading performance was .60.

Two studies attempted to relate intelligence with levels of socioeconomic status. Both involved students in the first and fifth grades from the poorer sections of New York City, except that the one by Deutsch included middle-class children. At both grade levels, Deutsch (25, pp. 80, 84) found lower social status to be associated with poorer performance on all intelligence scores, and that this close association became more marked as the child progressed through school. Keller (57, pp. 824, 829) also found depressed mean intelligence quotients by the fifth grade. She blames the constriction of experience and the poverty of spirit which it engenders for the below normal mean intelligence scores affected by the fifth grade.

The results of these studies leave little doubt as to the relationship of intelligence to both reading ability and socioeconomic status, exceptions granted. The distinct advantage of having high intellectual ability, particularly

if in the lower-class structure, seems obvious.

VII. BILINGUALISM

Points of view differ sharply, and in the research discrepancies appear, as to the effects of bilingualism on a child's mental capacity and school achievement. Dechant (21, p. 104) holds that children who come from homes where English is secondary, do not develop the vocabulary, accuracy in pronunciation and knowledge of sentence construction found among unilingual children. He brings reading into the picture by reasoning that the sentences most easily read are those that have been heard and spoken.

Ching's (17, p. 22) thinking is similar. He is of the opinion that a command of meaningful English vocabulary must precede reading instruction to ensure success, and claims that investigations prove that bilinguals have difficulty with word meanings in the first four grades. Timothy (97, p. 236) supports this view with two plausible explanations. First, she suggests, a child who thinks in another language for an extended period of time each day, is less able to respond to the language of the school as an instrument of instruction. Second, she argues that

learning different words for the same referent is more difficult and confusing than is using a single language.

Singer (89, p. 457) points to evidence to indicate that this linguistic uncertainty confuses the child to the point where he will likely attempt to forge a single language instrument from the two being used. Smith (91, pp. 119-284) in studying preschool children of non-American ancestry in Hawaii, concluded that the bilinguals she studied, at the age of school entrance, were at about the level of three-year-old monolingual children. Sheldon and Cutts (87, p. 520) are a little more conservative in their thinking. They would agree that involvement with a second language has an adverse influence on reading achievement only to the extent that the children come from homes where only a foreign language is spoken. Their study revealed no correlations otherwise.

In another Hawaiian study, Smith (90, pp. 692, 693) found that bilingual children do tend to confuse the two languages. She reports that their language retardation was serious enough to interfere with their first grade work. Singer (89, p. 453) concludes, upon reviewing the research, that bilingualism does affect school achievement when the new language is encountered in the primary grades, even though the bilinguals are of higher social status and

presumably of higher intelligence.

Perhaps, then, apart from intelligence, the crucial difference lies in whether one language is spoken in the home exclusively, while another is used for instruction at school. Perhaps the subjects referred to by Smith and Singer are in this category.

With reference to the influence of bilingualism on mental ability, a distinction is drawn between verbal and non-verbal intelligence tests, in that doing the former presupposes the ability to read and understand the language. On this point, Singer (89, p. 457) observes that mental ability tests which are based on linguistic factors tend to indicate that bilinguals are inferior. However, he notes that non-verbal tests, or tests translated into the vernacular of the bilinguals, show that both groups are equivalent, as one might expect. Singer concludes that, to the extent to which bilinguals are retarded in language, and are taught in that language medium, they will also be retarded on mental-verbal tests. In concurring that bilinguals are mentally equivalent with monolinguals, Timothy (97, p. 237) suggests that the verbal intelligence scores of bilinguals are misleading unless the tests used are "culture-free".

Three additional studies which appear to be

representative of the findings will now be reviewed briefly. In each, socioeconomic status is included as a variable.

Pintner and Arsenian (77, p. 262) found that the coefficients of correlation between scores of bilingualism and verbal intelligence tests of Jewish children were practically zero. High and low bilingual groups of boys and girls, equated on socioeconomic status, were compared on these same tests. No statistically significant differences were found. They concluded that bilingualism, in this particular group, bears no relationship to verbal intelligence. Perhaps the parents of children in this group, in general, were fluent in English as well as their native tongue, which would minimize the influence of the second language on intelligence scores.

Kittell (61, p. 267) discovered that the bilingual children scored lower on a verbal intelligence test than did the unilinguals, but that there were no statistically significant differences between the two groups in total mental age. This finding tends to verify Singer's conclusions. Injecting social class status as a variable, Kittell found that the unilingual middle-class children were superior in verbal mental ability to children from bilingual environments whether middle-class or lower-class.

Jones (54, p. 74) re-analyzed the data of an earlier

study, after having injected social class status as a variable. The subjects were separated according to their place of residence, whether urban or rural. When urban children were considered, the different linguistic groups in the same occupational class did not differ from each other significantly on scores of non-verbal intelligence. On the other hand, highly significant differences in non-verbal intelligence were found between corresponding groups in rural areas, and such groups were also found to differ significantly from each other in social status, so that occupational, rather than linguistic variations were considered to account for the difference. Jones concluded that bilingualism need not, then, be a source of intellectual disadvantage.

In sum, the investigator subscribes to the views of Jensen (51, p. 366). He cautions that it is difficult to generalize from the findings to date, because researchers have used varied definitions of bilingualism. In addition, they have analyzed data, in many instances, from small or atypical samples, and have utilized greatly varied procedures in gathering and analyzing the data. Jensen points out that, while some of the earlier studies exaggerated the disadvantages of bilingualism, later studies have stressed certain advantages. A lot seems to depend

upon point of view, and the tendency to wish to prove stated hypotheses. It would probably be well to take into account many variables, particularly including intelligence and socioeconomic status.

With reference to previous discussions in this chapter, it could probably be concluded, with some degree of assurance that, when one is favoured with high mental ability, as well as high social class status, the possibility of any disadvantage accruing from exposure to a second language, used for purposes of instruction, is considerably reduced.

VIII. SEX

Where sex is concerned, the general impression one gains from the literature, with regard to the language arts, is that girls have a slight advantage, at least through their early school years. But the results are not definitive.

Both McCarthy (67, p. 170) and Shire (88, pp. 66, 68, 69) found sex differences in certain aspects of language achievement to be small (not statistically significant), but they consistently favoured the girls.

Monk (70, p. 169) reported that a higher percentage of girls made up his superior group of writers in the

seventh grade.

Shire (88, p. 102), after applying statistical procedures to the achievement scores of her end-of-the-term first graders, concluded that the girls appeared to lead the boys by about two months in average reading ability. Her results were not statistically significant, however.

Schulman and Havighurst (83, p. 441) stand alone in claiming no reliable differences between the ninth and tenth grade boys and girls in their vocabulary study. Perhaps the explanation lies in the age level of the group. Evidence cited by Robinson (80, p. 266) seems to support this conclusion. She reports that in reading achievement, the girls significantly exceeded the boys in the first, second, third (greatest here) and fourth grades. By the fifth grade the achievement of the boys was not significantly lower than that of the girls. This difference remained negligible through the sixth, seventh and eighth grades.

Bossard (10, p. 230) argues that the different sex-appropriate language for boys and girls accounts in part for these minor sex-linked differences. Perhaps by the time the students reach the higher grades, any deficit imposed upon the boys through sex-appropriate restrictions in the use of language is offset by emerging academic and

vocational interests. In any case, the differences observed appear to be too trivial for grave concern.

IX. SUMMARY

In this chapter the literature utilized in this study was discussed as it related to the present investigation. An attempt was first made to show how the development of skill in the use of language facilitates academic success. Then, the inclusion of each item in the total Parent Questionnaire was defended by reference to the literature. A discussion of each of the other predictor variables, socioeconomic status, intellectual ability, bilingualism and sex, then ensued, as it related to reading.

CHAPTER III

THE EXPERIMENTAL DESIGN

In this chapter the plan of the study is discussed under the following headings: the sample, the testing instruments, administration and scoring of the tests and treatment of the data.

I. THE SAMPLE

Three hundred and thirty-nine children, consisting of all second grade pupils enrolled in five Edmonton Public Schools, made up the sample utilized in this study. They were selected from a population comprising all second grade pupils, who attended schools in the Edmonton public system, during the 1965-66 school term. The schools were chosen to be representative of the various socioeconomic strata in Edmonton. Two of the schools could probably be classified appropriately as middle- and upper-middle-class, while the other three are probably more typically middle-, lower-middle- and lower-class schools, with one of the latter including a moderately heavy weighting of transients.

A total of 241 children actually participated in the study, of which 118 were girls and 123 were boys. This group

constituted seventy-one per cent of the original sample. A number was assigned to each of the pupils for purposes of identification, since no names were used and no signatures were required on any of the three questionnaires.

II. THE TESTING INSTRUMENTS

Bilingualism

The occurrence and degree of bilingualism in the home was ascertained by means of the Hoffman Bilingual Schedule. This instrument, reputed to be suitable for elementary school pupils, furnishes a quantitative measure of an individual's bilingual background.

According to Hoffman (44, p. 48), the coefficient of correlation between the scores obtained by children on this instrument and judgmental estimates of their bilingual background was found to be .73. The retest reliability coefficient for a group of over 100 pupils was shown to be .81, with an interval of three weeks between the testing sessions (44, p. 46). Hoffman also claims that the validity of the schedule has been established as the result of proving that it does differentiate between groups whose bilingual background is comparatively well known (44, pp. 48 ff.).

Backed by such favourable figures, this instrument could be expected to provide an acceptable measure of bilingual background.

Socioeconomic Status

A measure of socioeconomic status was determined by means of the Blishen Occupational Class Scale, and Elley's revision (29, pp. 57-59) of the Gough Home Index Scale. The scores from the two scales were combined with equal weighting to provide a quantitative measure of social class status.

The Blishen Scale (7, p. 478), designed for use in Canada, was constructed by ranking 343 occupations on the basis of the number of years of schooling required and the amount of income received. The standard scores on the two variables were combined and averaged, resulting in a scale ranging from thirty-two to ninety, with a mean of approximately fifty and a standard deviation of ten (7, pp. 551, 552). A correlation of .94 between Blishen's scale and Hatt's "National Opinions Research Centre Index" (7, p. 523) is taken as justification for its use.

Information on the wage earner's occupation for the present study was obtained from the pupils' cumulative record cards.

In harmony with the considered opinions of other

investigators, Gough (40, p. 52) argues that occupation is only one aspect of social prestige, and suggests that varied avenues of approach to the problem are likely to lead to more meaningful results. Using the questionnaire technique, Gough produced a new "Home Index" scale, suitable for educational research with large numbers of subjects, which is easy to administer and simple to score. This scale is based on the Sim's Score Card and the American Home Scale, with certain original items added. Gough's questionnaire showed a test-retest reliability coefficient of .99 on college students and a Kuder-Richardson coefficient of .74 on high school students.

On the basis of the evidence given, it is felt that the use of these two scales in combination, should produce a useful and sensitive measure of socioeconomic status.

Mental Age

The pupil's intelligence quotients, as listed in their cumulative record cards, were derived from the scores on the Detroit Beginners First Grade Intelligence Tests. Their mental ages were computed by formula utilizing these scores and their chronological ages as of early June, 1966, at which time the reading tests were administered.

According to Cattell, as reported in Buros (14, pp. 101, 102), the validity of this particular test was determined by comparing the percentage of passes in three groups of children, one bright, one average, and one dull. Only those items were included in the final test which showed a satisfactory increase in the percentage of passes from the dull to the bright group.

One hundred and sixteen cases gave a correlation coefficient of .76 with the Stanford Binet. The reliability coefficient of the test was obtained by the odd-even technique. Corrected by the Spearman-Brown formula it was .91. Mental age norms were given based on 10,000 first grade children.

The test consists of a series of exercises using pictures of common objects which are to be marked in certain ways entirely by spoken directions. No reading or writing is required. The exercises vary from one another so as to indicate types of ability; and the different items in each experience grow progressively more difficult so as to locate the stronger pupils.

Reading Achievement

The Gates Advanced Primary Reading Test (Form 2) was selected to test reading achievement for the following reasons: it provides a measure of both word recognition and comprehension skills, it is easy to administer and score, and is at present utilized by the Edmonton public school system in making decisions about pupil placement.

According to an appraisal by Hopkins, as reported in Buros (16, pp. 1058, 1059), the items appear to have face validity, but no evidence appears for content, concurrent or predictive validity. Despite its limitations, Hopkins considers it to be useful as a survey measure. Reading achievement, in this study, then, will have to be considered in the context of these limitations.

The two subtests, Word Recognition and Paragraph Reading, are contained in separate booklets. Each of the forty-eight items in the Word Recognition subtest includes a picture and four words, one of which names the picture. The student is required to draw a line around the correct word. In the Paragraph Reading subtest, paragraphs of increasing length and complexity are concluded by written directions to make specific markings on the accompanying picture(s). This subtest comprises twenty-four items, for

a total of seventy-two items on the entire test.

The Parent Questionnaire

The Parent Questionnaire, devised by the investigator to assess certain aspects of the child's early home life, furnishes the focal point of the entire study. For this reason, its preparation and characteristics will be discussed in considerable detail. In developing the Parent Questionnaire, the investigator's chief concern was to produce an instrument sensitive enough, hopefully, to detect certain environmental conditions of early childhood, which prove to be among crucial indicators of success in reading achievement. No effort was made to encompass the entire array of possibilities.

Preceding any attempt to prepare this instrument, reference was first made to a number of relevant writings to permit basing the items upon sound principles of questionnaire construction. Included among the references consulted were expositions by Goode and Hatt (38, pp. 132-184), Hyman (47, pp. 149-168), Gee (35, pp. 311-322), Kerlinger (58, pp. 392-402), Moser (71, pp. 180-268), Wrightstone, Justman and Robbins (108, pp. 137-151) and Travers (99, pp. 172-184, 246-250). A prime consideration was the

realization that the respondents, albeit adults, would, of necessity, vary widely in their ability to read with meaning. Yet the fact that it was impossible to supply verbal explanations to the respondents, personally, demanded that the intent of each item be precise and explicit. This conflict of purpose posed a problem which proved to be a major obstacle in the formulation of the items.

Initially, certain dimensions were isolated which, in the experience and judgment of the investigator, influence the preparation for beginning reading. Questions were then formulated which, hopefully, would measure the degree to which these factors become operative in the child's life.

Existing schedules of varied types were then consulted in part to garner ideas but, more importantly, to observe how others had applied the principles of questionnaire construction in actually devising questions. Included were schedules composed by Milner (69, pp. 95-105), Yokley (109, pp. 157-162), and Sears, Maccoby and Levin (84, pp. 20-21, 496-498).

A number of revisions failed to produce a suitable instrument. Consequently, it was decided to survey the literature fully. The information gained was then utilized both as a basis in formulating the items, and as a means of

attaching significance to the various factors being measured. Hence, it was possible to establish more valid item weightings. As a result, the three dimensions of the home environment to be measured, as referred to in the first chapter under the heading "Definition of Terms", were also finalized.

Any previous notion of including other dimensions (for example, the affective, dependence-independence, and the motivation-aspiration dimensions) was rejected, chiefly to prevent the schedule from becoming too unwieldy, and to avoid the pitfall of delving into some of the more personal and delicate aspects of home life, which, no doubt, if included, would act to reduce both the incidence and truthfulness of parent response, thus lending unnecessarily to unfavourable bias in the results.

Item Evaluation. Following the composition of the Parent Questionnaire, as stated above, copies were submitted to competent "judges" for their critical appraisal. The three critics were men prominent in the fields of language, sociology and psychology, respectively. It will be noted that each of the disciplines represented is vitally concerned with child development, although from differing points of view. As the result of the excellent criticisms and suggestions rendered, the whole Parent Questionnaire

was entirely revamped, and thus prepared for the next stage of development.

Pilot Study. At this point (July, 1966) the Parent Questionnaires were submitted to the parents of ten youngsters from a non-participating school for their evaluation. The general achievement of the ten children, who also had just completed their second year of schooling, ranged all the way from honors to failure marks.

The parents were asked for their candid opinions about the entire instrument or any of its items. Specifically, they were asked whether the meaning of the items was clear, or ambiguous, or "loaded", so as to predispose them to answer in any particular way, or whether certain items annoyed or offended them personally. Relevant comments, criticisms or suggestions were also requested.

All of the parents participated, and only two made no comments. None of them found the items annoying, offensive, ambiguous, "loaded", or difficult to understand, but several made helpful suggestions which were taken into account in the final preparation of the Parent Questionnaire.

Item Weighting. The finished Parent Questionnaire consisted of twenty-five multiple choice items. Possible answers ranged along a continuum of the frequency of occurrence

of the factors in question. The respondents were requested to select the one most appropriate answer in each case.

To derive a numerical score, the responses were weighted such that a high score indicated "ample" experience within the dimension measured, while a low score reflected meagre "experience". It is presumed that the higher the score the better the preparation for initial reading instruction. Thus, the investigator assigned a maximum possible numerical value to each item, basing his judgment upon logic, and upon the relative significance attached, in the literature, to each factor in question.

Numerical values were then allotted to each "slot" along the continuum of possible answers for each item, hopefully, to reveal distinctions in extent of "experience". Admittedly, decisions about relative weightings were subjective and somewhat arbitrary. For this reason, three competent "judges" again scrutinized the items and made their observations, which permitted finalizing the weighting of the Parent Questionnaire items.

The Parent Questionnaires were distributed to the parents of children in the sample on three separate occasions. The first attempt utilized the mails in August of 1966, the second was carried out through the courtesy of the participating schools in October of the same year, and

the third, conducted in the month of January in 1967, constituted an effort to locate as many as possible of a sizable number of subjects who had moved elsewhere, within and without the city of Edmonton.

As previously indicated, the only means of identification on the Parent Questionnaires was the number originally assigned to each subject. It was hoped that the resulting anonymity would encourage an increase in the percentage of response.

Parent Interview. As a check on the reliability of the Parent Questionnaire, a group of twenty subjects from the original sample was selected by means of a table of random numbers, and their parents were interviewed personally, by the investigator, early in the month of June, 1967. The instrument itself was used as a basis for the interview, and the results were tabulated and correlated with those of the initial response by means of the computing facilities of the Division of Educational Research, Faculty of Education, University of Alberta. The coefficient of correlation was found to be .64 with an R^2 of .40. In view of the small numbers under comparison (twenty parent interviews), this correlation, admittedly, is not very high. It will be recalled, however, that a lapse of several months (averaging about nine or ten) occurred

between the initial and final testing, which could, conceivably, largely account for the relatively low correlation. Apart from this, the results may suggest a further limitation of the study.

III. ADMINISTRATION AND SCORING OF THE TESTS

The three questionnaires used in this study, the Hoffman Bilingual Schedule, the Gough Home Index Scale and the Parent Questionnaire were answered by the parents in their own homes, and then returned to the investigator, who marked them and recorded the results. Each of these schedules yielded a quantitative result, so that subjective judgment by the marker was avoided.

Information on parent occupation was obtained from the pupils' cumulative record cards. These data were checked against the list of occupations on the Blishen Scale to obtain a number. Then, by combining the scores of the Blishen and Gough scales, in equal weights, a numerical score was derived, indicating the comparative level of socioeconomic status of the family.

A measure of mental age was calculated by using the child's chronological age as of the first of June, 1966 (at approximately which time the reading tests were given)

and the intelligence quotients listed on the cumulative records as the result of administering the Detroit Beginners First Grade Intelligence Test early in the First Grade. Previous plans to use the results of the Detroit Advanced First Grade Intelligence Test had to be abandoned since it was given to so few of the subjects.

The Gates Advanced Primary Reading Test (Form 2) was administered by the classroom teachers who also marked the papers and recorded the results for their own use. The marking of the reading tests was then checked by the investigator.

IV. TREATMENT OF THE DATA

The statistical analysis of this study utilized a program for Applied Linear Regression Analysis developed by Bottenberg and Ward (11) of the Lackland Air Force Base, Texas. According to Ward (101, pp. 205-207), this technique has for some time been recognized as a powerful tool in investigating relationships between a set of independent variables (predictors) and a dependent variable.

One of the advantages of using multiple linear regression is that a number of variables, which have relationships with the criterion variable, can be controlled

statistically, whereas, otherwise statistical control is attempted by matching pairs of subjects in the treatment groups on all of the variables under study, which, of course, is a mammoth task.

V. SUMMARY

This chapter included a description of the sample, a discussion of the testing instruments employed in gathering the data, including an explanation of how the tests were administered and scored, and a brief summary of the statistical procedures utilized in analyzing the data.

CHAPTER IV

RESULTS AND ANALYSIS

This chapter begins with a discussion of the means and standard deviations of the scores of each variable for the 241 second grade pupils in the sample. Following this is a consideration of the correlations of the various predictor variables with reading. Then, the intercorrelations among all variables other than the criterion receive attention as a matter of interest and to assess some of the nuances of the interplay among these variables as they operate to influence the contribution of various predictor variables to the variance of scores on the criterion. Next, the results of the multiple linear regression analysis are discussed in order to ascertain the relative merits of each independent variable, as a predictor of reading, in the presence of all the other independent variables. Regression analysis is then considered, utilizing seven selected independent variables, in an attempt to determine whether the total Parent Questionnaire and each of its subtests predict better when chronological age and sex are excluded from the analysis. Finally, the usefulness of the Parent Questionnaire subtests, language, experience and books, as a triad of separate independent variables combined, is determined in order to ascertain whether this

combination of variables proves to be superior to the total Parent Questionnaire as predictors of reading, in the presence of all other predictor variables, or selected variables, either in combination, or singly. Tables are included as needed to present the results.

MEANS AND STANDARD DEVIATIONS OF ALL DATA FOR THE ENTIRE SAMPLE

It will be noted in Table I that the standard deviation for chronological age, measured in months, was rather small in view of the relatively large mean for this variable. The simple explanation is that, at this stage of schooling, there has been little opportunity for extensive variability in age to occur. Customarily, children enter school on or near their sixth birthday. Both the number of those sent home due to inadequate readiness for school, and those who repeat the first grade due to failure are minimal, particularly now with the Continuous Progress Plan operating in the Edmonton public school system. As indicated in Table I, about two-thirds of the subjects in the study could be expected to fall roughly within four and one-half months of the mean chronological age.

Mental age in months as derived from the scores of the Detroit Beginning First Grade Intelligence Test, showed

TABLE I
MEANS AND STANDARD DEVIATIONS
OF EACH VARIABLE SCORE

N=241		
Variable	Mean	Standard Deviation
Chronological Age	95.80	4.63
Mental Age	103.23	15.87
Bilingualism	2.28	4.57
Socioeconomic Status	120.59	33.29
Reading Achievement	56.93	13.03
Language Questionnaire	73.68	12.09
Experience Questionnaire	23.82	4.23
Books Questionnaire	41.49	11.04
Total Parent Questionnaire	138.99	23.25
Sex: Female	0.49	0.50
Male	0.51	0.50

a much wider dispersion of scores than did chronological age. This difference was not surprising since intellectual ability typically varies widely within any restrictions of chronological age. The mean intelligence quotient of the sample lay in the high average range of ability, and was possibly indicative of that of the entire population of second grade pupils attending all Edmonton public schools at that time.

Of particular interest was the independent variable, bilingualism, in that the standard deviation exceeded the mean score for the group. The explanation for this apparent anomaly lies in the construction of the Hoffman Bilingual Schedule which was used to measure bilingualism. A score of zero means that only English is spoken at home, whereas, as the score increases in size, so does the extent of use of a second language. Moreover, fairly considerable distinctions of difference in foreign language usage arise with only fractional differences in the scores between zero and one, whereas, above one, the scores increase much more rapidly with ever diminishing distinctions in the use of a second language being indicated. Hence, the low mean score in contrast with the relatively larger standard deviation.

The maximum possible score for socioeconomic status, as measured by the Blishen Occupational Class Scale and the

Gough Home Index combined, is 190 units, while that of the total Parent Questionnaire is only slightly higher at 200 units. Yet, a comparison of the two variables shows that the mean total Parent Questionnaire score considerably exceeded that of socioeconomic status, while its standard deviation was much lower. It appears that the Language Questionnaire, which accounted for half the numerical value of the total Parent Questionnaire score, was responsible for this difference. Its scores were clustered too closely to the maximum possible to permit a wider range of scores, and thus to indicate differences sensitively, as suggested by its high mean and low standard deviation. To illustrate, reference to Table I shows that the mean score of the Books Questionnaire was only slightly more than half the size of the Language Questionnaire, yet the two standard deviations differed only slightly. It appears that the parents, in general, either had an inflated estimate of the amount of verbal dialogue between themselves and their preschool children, or perhaps they misinterpreted the intent of various questions in the Language Questionnaire. It is acknowledged, however, that the two subsections of the Parent Questionnaire under comparison are measures of different things which may attenuate such a comparison.

MULTIPLE CORRELATIONS BETWEEN READING
ACHIEVEMENT AND ALL OF THE
PREDICTOR VARIABLES

As observed by Selltiz, et al:

...in the social sciences it is more or less conventional to reject the null hypothesis when the statistical analysis indicates that the observed difference would not occur more than five times out of one hundred by chance alone. (85, p. 418)

For the purposes of this study, the five- and one per cent levels of significance were accepted. With a sample size of 241 and 233 degrees of freedom, correlations of at least .13 and .17, respectively, were required to obtain these levels of significance. Correlations between reading achievement and all of the predictor variables are shown in Table II.

In order to determine the Pearson product-moment correlations between reading achievement and the other variables the following hypothesis was set up.

Hypothesis 1

There will be no significant correlation between the scores of the Gates Advanced Primary Reading Test (Form 2) and measures of the following variables:

a) chronological age

TABLE II
CORRELATIONS OF TOTAL READING ACHIEVEMENT WITH ALL
OF THE PREDICTOR VARIABLES

N = 241	
Predictor Variables Correlated with Total Reading Achievement	Coefficients of Correlation
Chronological Age	-.01
Mental Age	.41**
Bilingualism	.05
Socioeconomic Status	.41**
Language Questionnaire	.02
Experience Questionnaire	.22**
Books Questionnaire	.24**
Total Parent Questionnaire	.15*
Sex	.03

** Significant at the .01 level, $r > .17$

* Significant at the .05 level, $r > .13$

- b) bilingualism
- c) sex
- d) mental age
- e) socioeconomic status
- f) total Parent Questionnaire
- g) Language Questionnaire
- h) Experience Questionnaire
- i) Books Questionnaire

According to the data given, the only factors which displayed no significant relationships with reading were chronological age, bilingualism, sex and the Language Questionnaire.

The low, positive correlation between the scores of reading and the Language Questionnaire indicated that this particular questionnaire subtest was rather an insensitive indicator of distinctions in linguistic readiness for reading, possibly because it failed to measure that type of language development which makes a difference in reading readiness.

As for the remainder of the Parent Questionnaire, the scores of the subtests concerned with general experience and the possession of books correlated with reading at the one per cent level-, while that of the total Parent

Questionnaire was significant at the five per cent level of significance. In view of the preceding discussion, it seems possible that the responsibility for the lesser correlation of the total Parent Questionnaire with reading rests with the language subtest.

Those variables correlating most highly with reading were socioeconomic status and mental age. These correlations, although very substantial in view of the large sample, were far from perfect, however, leaving ample leeway for the interplay of variables to influence the prediction of reading.

INTERCORRELATIONS AMONG VARIABLES

OTHER THAN THE CRITERION

Mental Age

As indicated in Table III mental age correlated positively, at the one per cent level of significance, with socioeconomic status, the Experience Questionnaire, and the Books Questionnaire, while correlating with the total Parent Questionnaire at the five per cent level of significance.

The highest correlation (0.30) was with socioeconomic status. As one might expect, factors appeared to be

TABLE III

INTERCORRELATIONS AMONG VARIABLES

N = 241										
Variable	1	2	3	4	5	6	7	8	9	10
1. Total Reading	1.00	0.01	0.41**0.05	0.41**0.02	0.22**0.15*	0.24**0.15*	0.03			
2. Chronological Age	1.00	0.22**0.05	-0.15	0.06	0.07	-0.20	-0.15	0.06		
3. Mental Age	1.00	-0.11	0.30**0.08	0.22**0.17**0.15*	0.05					
4. Bilingualism	1.00	-0.19**0.18**	0.21**0.19**	0.22**0.03						
5. Socioeconomic Status	1.00	0.20**	0.45**0.50**	0.41**0.03						
6. Language Questionnaire	1.00	0.52**0.58**	0.87**0.14*							
7. Experience Questionnaire	1.00	0.54**0.67**	0.08							
8. Books Questionnaire	1.00	0.86**0.13*								
9. Total Parent Questionnaire	1.00	0.13*								
10. Sex: Female	1.00									

** Significant at the .01 level, $p > .17$ * Significant at the .05 level, $p > .13$

operative, such that, as the level of socioeconomic status increased, so did the mean mental age of the subjects in the study, in general. However, discrepancies did appear. The relationship was not constant, as illustrated in Table IV, which is arranged in ascending order of socioeconomic status for each school.

One must take cognizance of the fact that, in dealing with mean scores, as noted by Deutsch (23, p. 130), individual differences tend to be obscured and probably overlooked. Obviously, there were many exceptions to the rule. In other words many of the mental ages were high in relation to their corresponding chronological ages, irrespective of social class status, even though the means did establish a definite significant relationship between the two.

Although the scores of the two Parent Questionnaire subtests, Experience Questionnaire and Books Questionnaire were correlated with mental age at the one per cent level of significance, yet the total Parent Questionnaire correlated only at the five per cent level. One would assume that the latter was the case because of the non-significant correlation between the Language Questionnaire and mental age. Obviously, the language factor, as measured in this study, had but scant influence on mental age.

TABLE IV

MEANS OF EACH VARIABLE, EXCEPTING BILINGUALISM AND SEX, FOR EACH
SCHOOL, INCLUDING GRAND MEANS

N = 241									
School	Chrono- logical Age	Mental Age	Socio- economic Status	Total Reading	Parent Language	Questionnaire Experience	Books	Total	
1.	97.09	102.00	94.11	53.83	72.72	22.13	36.00	131.95	
2.	96.75	107.51	95.27	49.67	72.97	21.91	37.63	132.52	
3.	96.33	91.50	101.67	54.20	70.26	23.43	40.13	133.69	
4.	94.61	103.34	131.48	60.78	75.05	24.87	44.35	143.84	
5.	96.05	114.80	158.89	61.57	76.89	25.91	47.18	150.00	
Grand Mean	95.80	103.23	120.59	56.93	73.68	23.82	41.49	138.99	

Perhaps, as previously speculated, the above fact was due to the generally inflated scores on the language subtest, and hence, to its consequent failure to discriminate differences sufficiently. Nevertheless, the relatively close correlation of the Experience Questionnaire and the Books Questionnaire with mental age may offer a feasible explanation for some of the variability of mental ages within a particular social status subgroup, say, the lower-class minority. The explanation is that the differential provision in these homes for certain basic experiences, and the accessibility of appropriate reading materials, coupled with the consequent acquisition of ideas or concepts associated therewith, could accordingly influence the rate of growth of a child's mental ability.

It is noted that neither sex nor bilingualism was significantly related to mental age, although there was a definite trend in this direction in the case of the latter.

Bilingualism

As just stated, bilingualism showed non-significant relationships only with sex and mental age. It correlated with socioeconomic status and the Parent Questionnaire, including all of its subtests, language, experience and books, at the one per cent level of significance.

It would appear, in general, that as the level of socioeconomic status increased, the degree of bilingualism in the home decreased in this sample. Exceptions granted, the trend was for higher social status groups to utilize a single language more than was the case with the lower social status groups. Perhaps this trend is partly due to a tendency for immigrants to begin with lower paying jobs in this country. Subsequently, it is probable that economic advancements and improved knowledge of the language keep pace. Perhaps also, in line with Bernstein's thinking, there is a greater necessity for white collar workers to learn English well, since inter-personal relationships are more involved.

The reasons for the significant correlations between bilingualism and the questionnaire total- and subtest scores are evasive at this point. It is merely observed that high scores on the questionnaire tended, in general, to be associated with a greater degree of English usage, and less reliance upon a second language in the home for communication.

The Parent Questionnaire

It is noted that each of the questionnaire subtests was highly correlated with the other questionnaire subtests and, to an even greater extent, with the total Parent

Questionnaire. In the latter case, the high correlations were to be expected, since each subtest is a part of the whole questionnaire. In the case of the high subtest inter-correlations two possible explanations emerge. Perhaps the respondents were predisposed either to be optimistic or pessimistic in answering items on the questionnaire as a whole, and/or there was a certain overlap in the aspects of home life as measured by the subtests of this instrument. The latter probability was lessened since their respective correlations with other variables, including the criterion, reading, were far from identical. For example, the language subtest correlated more closely with the total Parent Questionnaire than did either of the other two subtests, yet, while these latter subtests, experience and books, as well as the total Parent Questionnaire scores, all correlated significantly with reading achievement, that between reading and the language subscore was virtually nil.

Socioeconomic Status

The correlations between socioeconomic status and the various questionnaire scores were all significant beyond the one per cent level of confidence. While social status correlated highly with reading, the Language Questionnaire failed to correlate at all, and the total

Parent Questionnaire correlated with reading only at the five per cent level of significance. (As reported previously, the Experience Questionnaire and the Books Questionnaire, enjoyed substantial correlations with reading.) Yet, all of the questionnaire scores, subtests and total scores inclusive, correlated with socioeconomic status beyond the one per cent level of significance, with that of language being by far the lowest, albeit significant. Simply stated, this means that the higher social status subjects in this study, on the whole, scored higher on the total Parent Questionnaire and its various parts than did those of the lower social status subjects.

Evidently, then, there was an overlap, in that the questionnaire tended to measure some of the aspects of socioeconomic status. A quick perusal of the items on the Gough Home Index and the Parent Questionnaire does indicate some overlapping. Admittedly, also, ownership of certain material possessions and the ability to travel outside one's own immediate vicinity, is dependent, to a degree, on purchasing power, which, in turn, is an important facet of socioeconomic status. However, as noted in the preceding chapter, this is by no means the total answer, as priorities enter the picture, and the effect upon children of inappropriate purchasing priorities can be felt deeply in

either social strata, insofar as initial reading readiness is concerned.

In any case, since their correlations were not perfect, each of these dimensions, socioeconomic status and the Parent Questionnaire, must also possess unique properties. Perhaps their distinctly different correlations with reading achievement support this view. On the basis of this type of logic, one should reasonably expect the Parent Questionnaire, then, in some way, to make a contribution to the prediction of reading achievement in this study.

REGRESSION ANALYSIS USING ALL OF THE VARIABLES

Multiple linear regression was utilized to ascertain the contribution of each variable as a predictor of reading achievement. This was accomplished by restricting each variable in turn from the full model, the results of which are presented in Table V. It is important to note that the contribution of a particular variable to the variance of scores on the criterion, has meaning only in the presence of the other variables included in the regression equation.

TABLE V

CONTRIBUTION OF VARIABLES WITH TOTAL READING AS

CRITERION

Restriction	RSQ Full	RSQ Restricted	df	F-Ratio	Probability
N = 241					
Total Parent Questionnaire	0.2828	0.2826	1/235	0.06	0.8078
Books Questionnaire	0.3074	0.2973	1/233	3.43	0.0654
Experience Questionnaire	0.3074	0.3033	1/233	1.39	0.2390
Language Questionnaire	0.3074	0.2850	1/233	7.56	0.0064**
Socioeconomic Status	0.2828	0.1953	1/235	28.67	0.0000**

** Significant at the .01 level

* Significant at the .05 level

TABLE V (Continued)

N = 241 Restriction	RSQ Full	RSQ Restricted	df	F-Ratio	Probability
Bilingualism	0.2828	0.2600	1/235	7.46	0.0068**
Mental Age	0.2828	0.1928	1/235	29.49	0.0000**
Chronological Age	0.2828	0.2816	1/235	0.40	0.5303
Sex	0.2828	0.2828	1/235	0.01	0.9305

** Significant at the .01 level

* Significant at the .05 level

FURTHER DISCUSSION OF HYPOTHESES

Hypothesis 2

There will be no significant contribution to the variance of scores on the Gates Advanced Primary Reading Test (Form 2) by the scores of the total Parent Questionnaire in the presence of socioeconomic status, bilingualism, mental age, chronological age and sex.

Contrary to what was expected, the null hypothesis was accepted, which means that, taking into account the correlations of socioeconomic status, bilingualism, mental age, chronological age and the sex of the subject with the criterion variable, and the intercorrelations of the predictor variables with each other, the total Parent Questionnaire scores did not contribute significantly to the regression equation predicting students' reading achievement. That is, a knowledge of the total Parent Questionnaire score did not add to the ability to predict reading scores.

It will be recalled from Table II that, other variables ignored, the total Parent Questionnaire scores correlated beyond the five per cent level of significance with reading. This matter will be discussed further in the next chapter.

In order to assess the distinctive contributions of each of the Parent Questionnaire subtests to the scores on the criterion, reading achievement, it was decided to include them as separate variables in the study, and to substitute each of them, in turn, for the total Parent Questionnaire.

Hypothesis 3

There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by the scores of the Language Questionnaire, in the presence of Experience Questionnaire, Books Questionnaire, socioeconomic status, bilingualism, mental age, chronological age and sex.

Table V shows that the F value of 7.56, calculated between the unrestricted model and the restricted model, in which the Language Questionnaire was deleted, has a probability of less than .01. The chances that such a reduction in the error sum of squares would occur when there is no difference in the population are less than one in one hundred. On the basis of this analysis, the null hypothesis was rejected. In other words, the Language Questionnaire scores contributed significantly to the variance of reading scores, when cognizance was taken of the effects of socioeconomic status, bilingualism, mental age,

chronological age and sex of the pupil.

This finding is in apparent opposition to that from the table of correlations of the predictor variables with reading achievement (Table II). An explanation of this apparent ambiguity will be attempted in the next chapter.

Hypothesis 4

There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by the scores of the Experience Questionnaire, in the presence of Language Questionnaire, Books Questionnaire, socioeconomic status, bilingualism, mental age, chronological age and sex.

The testing of the hypothesis involved restricting the Experience Questionnaire from the full model. As shown in Table V, the null hypothesis (4) was accepted. The scores of the Experience Questionnaire, then, did not contribute significantly to the reading scores over and above that contributed by the other variables. Yet a definite relationship was shown to exist between these two variables as indicated in Table II, which shows selected results from the correlation matrix. Further reference to this point will be made in the next chapter.

Hypothesis 5

There will be no significant contribution to the variance of scores on the Gates Advanced Primary Reading Test (Form 2) by the scores of the Books Questionnaire, in the presence of Language Questionnaire, Experience Questionnaire, socioeconomic status, bilingualism, mental age, chronological age and sex.

In order to test this hypothesis, the Books Questionnaire was deleted from the unrestricted model. As shown in Table V, the obtained F ratio of 3.43 was not quite significant at the five per cent level, thus supporting the hypothesis. In other words, the presence of the Books Questionnaire in the unrestricted model did not improve its prediction to the accepted level of significance, although this was the trend.

Although the study was primarily concerned with the relationship between a student's reading ability and certain factors related to his home background, it was nevertheless necessary to consider other variables which have been shown, in the literature, to be related to one's reading ability in varying degrees. Socioeconomic status, bilingualism, mental age, chronological age and sex were selected as variables which should be included in the analysis to give a less contaminated indication of the predictability of

the main predictor variables, the total Parent Questionnaire and its subtests.

Hypotheses 6a, 6b, 6c, 6d and 6e postulated that the variables, socioeconomic status, bilingualism, mental age, chronological age and sex would not contribute significantly to the variances of students' reading scores, in the presence of the other variables. The contributions of these predictor variables are also shown in Table V.

Hypothesis 6

There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by the scores of :

- a) socioeconomic status
- b) bilingualism
- c) mental age
- d) chronological age, and
- e) sex

separately, and in turn, in the presence of the total Parent Questionnaire and the other variables listed, except as restricted, one at a time.

To test Hypothesis 6a, socioeconomic status was restricted from the full model. As shown in Table V, the obtained F ratio of 28.67 was highly significant beyond the

.001 level, thus rejecting the null hypothesis. That is, the pupils' scores indicating level of social status reduced the criterion error sum of squares to the extent that such a reduction could have occurred by chance factors less than one time in a thousand, given the same group. Thus, in the presence of the total Parent Questionnaire, bilingualism, mental age, chronological age and sex, the students' socioeconomic status contributed significantly to the prediction of their reading scores.

In order to test Hypothesis 6b, bilingualism was restricted. The obtained F value of 7.46, as shown in Table V, was significant beyond the one per cent level. Knowledge about the extent of bilingualism in the students' homes contributed significantly to the prediction of reading scores when the contribution of the other predictor variables was taken into account. When multiple correlations were considered, however, the two variables showed no appreciable degree of relationship. The difference arose in the interplay of bilingualism with the other variables, which will receive further consideration in the succeeding chapter.

For testing Hypothesis 6c, mental age was omitted from the full model. The obtained F ratio of 29.49, being the highest shown in Table V, was highly significant

beyond the .001 level. Thus, the usefulness of mental age as a predictor of reading achievement was demonstrated, both in the presence of the other predictor variables, and in multiple correlations (see Table III).

Chronological age was restricted to test Hypothesis 6d. As shown in Table V, the probability of getting an F value of 0.40 by no means reached the .05 level of significance set for this study. Chronological age, in this study, when tested in the presence of the total Parent Questionnaire, socioeconomic status, bilingualism, mental age and sex did not contribute significantly to the variance of scores on reading achievement as measured by the Gates test. As cited previously, the relationship between the two variables was found to be trivial, even slightly negative, in the case of multiple correlations (Table III).

To test Hypothesis 6e, the sex of the student, as a predictor variable, was deleted from the full model. As with chronological age, Table V indicates that an obtained F ratio of 0.01 was far from being statistically significant. Knowing the students' sex, then, did not significantly improve the prediction of reading achievement, when considered in the presence of the other variables, nor did sex itself correlate with reading at an acceptable level of significance, as shown in Table III.

REGRESSION ANALYSIS USING SEVEN SELECTED INDEPENDENT
VARIABLES AS PREDICTORS OF READING ACHIEVEMENT

Ferguson echoes and elaborates on Guilford's statement:

Investigators concerned with the problems of prediction frequently attempt to identify independent variables which show a high correlation with the criterion and a low correlation with each other. If two variables have a fairly high correlation with the criterion and a low correlation with each other, both measure different aspects of the criterion, and both will contribute substantially to prediction. If two variables have a high correlation with each other, they are measures of much the same thing, and inclusion of both, instead of either one or the other, will contribute little to the prediction achieved. (31, p. 302)

In an attempt to minimize redundancy and thence to improve the effectiveness of prediction, the following variables were deleted:

1. Chronological age, because it did not correlate significantly with reading and yet showed a significant overlap with mental age.

2. Sex, because of its significant correlation with the total Parent Questionnaire, the Language Questionnaire and the Books Questionnaire, but also because of its failure to correlate significantly with reading.

Bilingualism was retained because of its significant contribution to the variance of scores in reading achievement in the presence of the other variables, even

though it did show significant correlations with five of the other variables, while failing to do so with the criterion, reading.

Reading achievement was now studied as being a function of mental age, bilingualism, socioeconomic status, the total Parent Questionnaire, and all of the questionnaire subtests, language, experience, and books. It should be clearly understood that, unlike the previous analysis, the results of which were cited in Table V, in this case, when one of the three questionnaire subtests was utilized, neither the other subtests nor the total Parent Questionnaire scores was included. In a similar fashion, when the total Parent Questionnaire score was utilized in the analysis, all of its subtests were excluded.

The results of the present regression analyses are presented in Table VI, using only the seven predictor variables listed above, by restricting each one in turn, singly and in accordance with the conditions stated above.

FURTHER DISCUSSION OF HYPOTHESES

Hypothesis 7

There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by each of the scores

TABLE VI

CONTRIBUTIONS OF SEVEN SELECTED VARIABLES USING TOTAL

READING AS CRITERION

Restriction	RSQ Full	RSQ Restricted	df	F-Ratio	Probability
N = 241					
Total Parent Questionnaire	0.2816	0.2815	1/237	0.03	0.8632
Books Questionnaire	0.2841	0.2815	1/237	0.84	0.3589
Experience Questionnaire	0.2826	0.2815	1/237	0.37	0.5438
Language Questionnaire	0.2888	0.2815	1/237	2.42	0.1210

** Significant at the .01 level

* Significant at the .05 level

TABLE VI (Continued)

N = 241 Restriction	RSQ Full	RSQ Restricted	df	F-Ratio	Probability
Socioeconomic Status	0.2816	0.1871	1/237	31.17	0.0000**
Bilingualism	0.2816	0.2589	1/237	7.50	0.0066**
Mental Age	0.2816	0.1895	1/237	30.39	0.0000**

** Significant at the .01 level

* Significant at the .05 level

of the total Parent Questionnaire and its subtests, language, experience and books, separately, in the presence of socioeconomic status, bilingualism, and mental age, only.

It is observed that in none of these instances was the F value large enough to produce statistically significant probability readings, so that the null hypothesis was accepted. That is, under the conditions stated above, neither the scores of the total Parent Questionnaire nor any of its subtests significantly improved the prediction of reading. It will be recalled, from Table V, that when all possible predictors were included, the Language Questionnaire made a highly significant contribution, and the Books Questionnaire approached significance at the five per cent level. It would appear that the contributions of these two variables was dependent upon an interplay with those independent variables not included in the present analysis. The results will be further scrutinized in Chapter V.

Hypothesis 8

There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by the scores of each of socioeconomic status, bilingualism and mental age, separately, in the presence of each other (except as restricted) and the

total Parent Questionnaire.

As found previously, with all independent variables included, knowledge of a child's bilingual background, when chronological age and sex were excluded, remained a potent predictor of reading achievement ($P < .01$). Mental age and socioeconomic status, as expected, still contributed to the variance of scores in reading at a highly significant level.

Because of the failure of the total Parent Questionnaire scores to add significantly to the prediction of pupils' reading scores, under the terms of reference utilized up to this point, it was decided to determine whether there would be any advantage in using a combination of the scores of the three questionnaire subtests, as a triad of separate predictor variables combined, in its stead. That is, the three independent variables, the Language Questionnaire, the Experience Questionnaire and the Books Questionnaire were to be restricted as triads from the full models encompassing varied combinations of other predictor variables, to test their combined influence on reading achievement in this manner.

Initially, models were set up so that the full model included all of the variables, except that the three questionnaire subtests replaced the total Parent Questionnaire score, while the restricted model included the total

Parent Questionnaire score, but excluded its three subtests as independent variables. The reason for taking this step was to determine whether the three subtests, as a triad of separate variables in combination, would make a more powerful tool in predicting reading than would the total Parent Questionnaire score, which, of course, is a unit score consisting of the sum of the scores of its three subtests. The results are presented in Table VII. The hypothesis set up to test these models follows.

Hypothesis 9

There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by the scores of the three questionnaire subtests, language, experience and books, as a triad of separate predictor variables combined, over and above that of the total Parent Questionnaire scores in the presence of mental age, bilingualism, socioeconomic status, chronological age and sex.

It was found that, in the presence of all the predictor variables (total Parent Questionnaire excepted), the three questionnaire subtests, language, experience and books, permitted the prediction of the pupils' reading scores significantly better than did the total

TABLE VII

CONTRIBUTIONS OF TOTAL PARENT QUESTIONNAIRE AND A TRIAD OF INDEPENDENT
 VARIABLES COMBINED, QUESTIONNAIRE LANGUAGE, QUESTIONNAIRE
 EXPERIENCE AND QUESTIONNAIRE BOOKS IN THE PRESENCE
 OF MENTAL AGE, SOCIOECONOMIC STATUS, SEX
 BILINGUALISM AND CHRONOLOGICAL AGE
 WITH TOTAL READING AS CRITERION

Restriction	RSQ Full	RSQ Restricted	df	F-Ratio	Probability
Total Parent Questionnaire	0.2828	0.2826	1/235	0.06	0.8078
Language Questionnaire					
Experience Questionnaire					
Books Questionnaire	0.3074	0.2826	3/232	2.77	0.0423*

** Significant at the .01 level

* Significant at the .05 level

Parent Questionnaire scores, as indicated in Table VII, at less than the two per cent level of significance ($P = .0170$).

These results provided the necessary encouragement to carry out the decision to restrict the separate questionnaire subtest scores, in triads, from varied combinations of other independent variables, in order to determine their joint contribution to the prediction of reading scores. Appropriate regression equations for the additional hypotheses were then constructed, in order to accomplish this task, and the results are presented in the ensuing tables (Tables VIII, IX, X and XI).

Hypothesis 10

There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (form 2) by the scores of the three questionnaire subtests, language, experience and books, as a triad of separate predictor variables combined, over and above that of the total Parent Questionnaire scores in the presence of:

- a) mental age, bilingualism and socioeconomic status
- b) mental age alone
- c) bilingualism alone, and
- d) socioeconomic status alone

TABLE VIII

CONTRIBUTIONS OF TOTAL PARENT QUESTIONNAIRE AND A TRIAD OF INDEPENDENT
VARIABLES COMBINED, QUESTIONNAIRE LANGUAGE, QUESTIONNAIRE
EXPERIENCE AND QUESTIONNAIRE BOOKS IN THE PRESENCE
OF MENTAL AGE, SOCIOECONOMIC STATUS AND
BILINGUALISM WITH TOTAL READING
AS CRITERION

Restriction	RSQ Full	RSQ Restricted	df	F-Ratio	Probability
Total Parent Questionnaire	0.2816	0.2815	1/237	0.03	0.8632
Language Questionnaire Experience Questionnaire Books	0.3071	0.2815	3/235	2.90	0.0358*

**

Significant at the .01 level

*

Significant at the .05 level

TABLE IX

CONTRIBUTIONS OF TOTAL PARENT QUESTIONNAIRE AND A TRIAD OF INDEPENDENT
VARIABLES COMBINED, QUESTIONNAIRE LANGUAGE, QUESTIONNAIRE
EXPERIENCE AND QUESTIONNAIRE BOOKS IN THE PRESENCE
OF MENTAL AGE WITH TOTAL READING AS
CRITERION

Restriction	RSQ Full	RSQ Restricted	df	F-Ratio	Probability
Total Parent Questionnaire	0.1721	0.1645	1/239	2.19	0.1403
Language Questionnaire					
Experience Questionnaire					
Books Questionnaire	0.2425	0.1645	3/237	8.14	0.0000**
** Significant at the .01 level					
* Significant at the .05 level					

TABLE X

CONTRIBUTIONS OF TOTAL PARENT QUESTIONNAIRE AND A TRIAD OF INDEPENDENT
VARIABLES COMBINED, QUESTIONNAIRE LANGUAGE, QUESTIONNAIRE
EXPERIENCE AND QUESTIONNAIRE BOOKS IN THE PRESENCE
OF BILINGUALISM WITH TOTAL READING AS

CRITERION

Restriction	RSQ Full	RSQ Restricted	df	F-Ratio	Probability
Total Parent Questionnaire	0.0294	0.0028	1/239	6.55	0.0111*
Language Questionnaire Experience Questionnaire Books Questionnaire	0.1362	0.0028	3/237	12.20	0.0000**

** Significant at the .01 level

* Significant at the .05 level

TABLE XI

CONTRIBUTIONS OF TOTAL PARENT QUESTIONNAIRE AND A TRIAD OF INDEPENDENT
VARIABLES COMBINED, QUESTIONNAIRE LANGUAGE, QUESTIONNAIRE
EXPERIENCE AND QUESTIONNAIRE BOOKS IN THE PRESENCE
OF SOCIOECONOMIC STATUS WITH TOTAL
READING AS CRITERION

Restriction	RSQ Full	RSQ Restricted	df	F-Ratio	Probability
Total Parent Questionnaire	0.1718	0.1712	1/239	0.19	0.6631
Language Questionnaire Experience Questionnaire Books					
Questionnaire	0.2024	0.1712	3/237	3.09	0.0276*

** Significant at the .01 level

* Significant at the .05 level

The null hypotheses 8b and 8c were rejected, as shown in Tables IX and X, respectively ($P < .001$),

The null hypotheses 8a and 8d were rejected, as indicated in Tables VIII and XI, respectively ($P < .05$).

The use of regression analysis, as a statistical procedure, facilitates the estimation of actual percentage contributions of a variable, or combination of variables, to the variance of scores on the criterion, in this case, reading achievement. By subtracting the multiple correlation squared (RSQ) of the restricted model from that of the full model, a decimal fraction is obtained which represents the reduction in predictive efficiency when a predictor variable is excluded in the presence of other variables. This figure can then be converted to a percentage contribution simply by multiplying it by a hundred.

Examples of this procedure are obtained by referring back to Table VII. When the total Parent Questionnaire was excluded as a variable, the result was as follows:

$$\text{RSQ (full)} - \text{RSQ (restricted)} = 0.2828 - 0.2826 = 0.0002$$

It can be seen readily that the total Parent Questionnaire, as a single variable, contributed virtually nothing, percentagewise, to the variance of reading scores. When the three questionnaire subtests were restricted,

RSQ (full) - RSQ Restricted - $0.3074 - 0.2826 = 0.0148$, or about one and one-half per cent, which is evidence that the subtests, as separate variables combined, made a more effective and powerful predictor of reading than did the total Parent Questionnaire as a unitary score.

In the presence of the three selected variables, mental age, bilingualism and socioeconomic status, as shown in Table VIII, it was found that the triad of questionnaire subtests as predictor variables combined, contributed to the variance of reading scores significantly, beyond the five per cent level of confidence (about two and one-half per cent of the variance), whereas, that of the total Parent Questionnaire was not significant (no percentage contribution).

In the presence of mental age alone, the contribution of the triad of questionnaire subtests in predicting reading achievement (about eight per cent) was highly significant ($P < .001$), while the total Parent Questionnaire scores contributed less than one per cent to the variance of reading scores (see Table IX). The same thing was true when the contributions of these predictor variables was estimated in the presence of bilingualism, as indicated in Table X, except that in this case, the total Parent Questionnaire, as a predictor, did reach statistical

significance (contributed about two and one-half per cent), as compared with a very high level of significance for the triad of questionnaire subtests, which contributed in excess of thirteen per cent.

Finally, in the presence of socioeconomic status alone, the triad of questionnaire subtests contributed to the variance of scores of reading (over three per cent) significantly beyond the five per cent level of confidence, while the total Parent Questionnaire failed utterly as a predictor. Evidently, then, when the total Parent Questionnaire is broken into its sub-parts, there is some unique property in it, apart from pure socioeconomic status per se, as measured, that is of value in adding to the prediction of reading.

In sum, it is observed that, only in one instance, did the total Parent Questionnaire become a significant contributor to the variance of reading scores in the presence of other independent variables, whether in total, in varied combinations of powerful predictor variables, or singly, as contrasted with the significant contributions to prediction being made by the triad of combined questionnaire subscores, in every instance. Moreover, their power as predictors was far superior, even in the one case where the total Parent Questionnaire did reach a statistical level

of significance in prediction. Possible reasons for this apparent contradiction will be explored in the next chapter.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

This chapter constitutes a summary of the study. It contains a statement of the purposes, hypotheses, design, and limitations of the study. In addition, it includes a summary of the findings and a statement of the conclusions, implications and suggestions for further research.

I. PURPOSE

Underlying the present study is the basic assumption that certain previously defined, home-based experience deficits, having potential detriment to educational success, may occur in a child's early years. This study set out to investigate the influence of these factors on the child's subsequent reading achievement, specifically, at the end of his second year of schooling. It was hoped that relationships with reading would be discovered which would be quite apart from the well established general social class influences, thus revealing somewhat unique factors in the home which interlink or cut

across social class lines, and make felt their own distinctive impact upon reading achievement, notwithstanding the environs.

II. STATEMENTS OF HYPOTHESES

1. There will be no significant correlations between the scores of the Gates Advanced Primary Reading Test (Form 2) and measures of the following variables:

- a) chronological age
- b) bilingualism
- c) sex
- d) mental age
- e) Socioeconomic status
- f) total Parent Questionnaire
- g) Language Questionnaire
- h) Experience Questionnaire
- i) Books Questionnaire

2. There will be no significant contribution to the variance of scores on the Gates Advanced Primary Reading Test (Form 2) by the scores of the total Parent Questionnaire in the presence of socioeconomic status, bilingualism, mental age, chronological age and sex.

3. There will be no significant contribution to the variance of scores on the Gates Advanced Primary Reading Test (Form 2) by the scores of the Language Questionnaire in the presence of Experience Questionnaire, Books Questionnaire, socioeconomic status, bilingualism, mental age, chronological age and sex.

4. There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by the scores of the Experience Questionnaire in the presence of Language Questionnaire, Books Questionnaire, socioeconomic status, bilingualism, mental age, chronological age and sex.

5. There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by the scores of the Books Questionnaire in the presence of Language Questionnaire, Experience Questionnaire, socioeconomic status, bilingualism, chronological age and sex.

6. There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by the scores of:

- a) socioeconomic status
- b) bilingualism
- c) mental age

d) chronological age, and

e) sex

separately, and in turn, in the presence of the total Parent Questionnaire and the other variables listed, except as restricted one at a time.

7. There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by each of the scores of the total Parent Questionnaire, and its subtests, language, experience and books, separately, in the presence of socioeconomic status, bilingualism and mental age only.

8. There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by the scores of each of socioeconomic status, bilingualism and mental age, separately, in the presence of each other (except as restricted) and the total Parent Questionnaire.

9. There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by the scores of the three questionnaire subtests, language, experience and books, as a triad of separate predictor variables combined, over and above that of the total Parent Questionnaire scores in the presence of mental age, bilingualism, socioeconomic status,

chronological age and sex.

10. There will be no significant contribution to the variance of scores on the total Gates Advanced Primary Reading Test (Form 2) by the scores of the three questionnaire subtests, language, experience and books, as a triad of separate variables combined, over and above that of the total Parent Questionnaire scores in the presence of:

- a) mental age, bilingualism and socioeconomic status
- b) mental age alone
- c) bilingualism alone, and
- d) socioeconomic status alone.

III. DESIGN

The sample used in this study was originally made up of all second grade pupils in five Edmonton public schools, and included a broad range of socioeconomic status. Due to family mobility and failure to respond to one or more of the three questionnaires which were submitted to the parents for completion, the sample diminished from 339 to 241 participants.

An attempt was made to control a number of variables. The child's sex and his chronological age in months were obtained from the cumulative records in the schools. His

mental age in months was calculated by formula, utilizing chronological age as at the time of testing for reading achievement, and intelligence quotients as established by the Detroit Beginning First Class Intelligence Test, in common use in the Edmonton public school system. The raw scores from the total Gates Advanced Primary Reading Test (Form 2), which was administered near the end of the second school term, afforded a measure of the child's reading performance. Since immigration to our country from non-English speaking nations is a continuing practice, it was decided to include a measure of bilingualism to observe its influence on reading.

In view of the purpose of this study, it was, of course, essential that a measure of the family's level of socioeconomic status be obtained. To secure this data, scores on the Blishen Occupational Class Scale and the Gough Home Index Scale, as modified by Elley (29, pp. 56-59) were combined in equal weights.

In order to ascertain the extent of certain of a child's early life experiences, upon which the study focuses its major attention, a questionnaire was devised by the investigator and administered to the parents. This instrument comprised three major subsections, each of which was also used as a separate variable in the study,

in addition to the variable contained in the total scores of the Parent Questionnaire. Later, all of these subtests were combined as a triad to form a separate predictor variable.

The first subsection of this instrument consisted of items which inquired into the amount of verbal dialogue between a child and adults in the home, hopefully to procure a quantitative measure of language development. The second sought information concerning the child's general background experience, including such things as travel away from home and visits, allegedly of some educational merit, to varied points of interest. The remaining subsection of the Parent Questionnaire explored the degree of use, by the child, of books and other reading materials available to the home.

The statistical analysis of the data was carried out at the computing centre, Division of Educational Research Services, Faculty of Education, at the University of Alberta by means of the IBM 7040 and 360 computers. In addition to determining the means and standard deviations of each variable for the entire sample, multiple intercorrelations among all of the variables and between each variable and the criterion, reading, were established. Then the individual contribution of each independent variable to the

variance of scores on reading was ascertained by a statistical technique developed by Bottenberg and Ward (11), known as Applied Multiple Linear Regression Analysis.

IV. LIMITATIONS

A major limitation of this study is resident in the lack of randomness in selecting the sample. However, attention was given to coverage of a broad range of socioeconomic status, which is a basic condition for this study.

Family mobility and the neglect of certain parents to respond to the questionnaires reduced the sample to seventy-one per cent of its original size, thus introducing the distinct possibility of bias in the findings. However, the investigator is not aware of the existence or extent of any systematic biases in the sample as a result of incomplete returns.

The intent of the Language Questionnaire to measure quantity rather than quality of language usage in the home is acknowledged as a possible limitation of the study. Moreover, it appears that its success in this endeavour was limited, perhaps due to misinterpretation of intent by the respondents.

Finally, it is readily admitted that in this study no attempt was made to control other independent variables which may have been possible contributors to reading difficulty.

V. SUMMARY OF FINDINGS.

The main findings in the investigation which are presented in Table XII, may be summarized as follows:

1. The total Parent Questionnaire correlated significantly with reading at the five per cent level, but its contribution to the variance of scores on reading, as shown through multiple linear regression analysis, was not statistically significant, when measured in the presence of chronological age, mental age, bilingualism, socioeconomic status, and sex.

2. There was no significant correlation between the Language Questionnaire and reading. However, when considered in the presence of chronological age, mental age, bilingualism, socioeconomic status, sex, the Experience Questionnaire and the Books Questionnaire, the Language Questionnaire contributed to the variance of reading scores at the one per cent level of significance.

3. Product-moment correlations between the Experience Questionnaire and reading were significant at

TABLE XII

COMPARATIVE TABLE OF CORRELATIONS AND F-RATIO VALUES

WITH READING AS CRITERION

N = 241			
Variable	Pearson Correlation	F-Ratio Values	Probability
1. Total Parent Questionnaire	.15*	0.06	0.8078
2. Language Questionnaire	.02	7.56**	0.0064**
3. Experience Questionnaire	.22**	1.39	0.2390
4. Books Questionnaire	.24**	3.43	0.0654
5. Socioeconomic Status	.41**	28.67**	0.0000**

** Significant at the .01 level

* Significant at the .05 level

TABLE XII (Continued)

N = 241 Variable	Pearson Correlation	F-Ratio Values	Probability
6. Bilingualism	.05	7.46**	0.0068**
7. Mental Age	.41**	29.49**	0.0000**
8. Chronological Age	-.01	0.40	0.5303
9. Sex	.03	0.01	0.9305

** Significant at the .01 level

* Significant at the .05 level

the one per cent level, but in the presence of chronological age, mental age, bilingualism, socioeconomic status, sex, the Language Questionnaire and the Books Questionnaire, the relationship was not significant.

4. The Books Questionnaire correlated with reading at the one per cent level of significance, but in the presence of chronological age, mental age, bilingualism, sex, socioeconomic status, the Language Questionnaire and the Experience Questionnaire, the relationship did not reach significance at the five per cent level, although very close to it.

5. The significant relationship between socioeconomic status and reading, indicated in the product-moment correlations, was confirmed when measured in the presence of the other independent variables, as shown by regression analysis.

6. In the light of Pearson product-moment correlations, bilingualism was not significantly related with reading, whereas, in the presence of all the other predictor variables, the relationship was significant at the one per cent level.

7. Mental age was highly related to reading, whether determined by the technique of correlation or assessed through multiple linear regression in the presence of all of

the other variables.

8. There was no significant relationship between chronological age and reading in the present study, either in terms of correlations or with chronological age as a predictor in the presence of all of the other variables.

9. Sex was in the same category as chronological age with respect to its relationship with reading; it was not statistically significant.

10. Neither the total Parent Questionnaire nor any of its subtests, taken singly, contributed significantly to the prediction of reading in the presence of mental age, bilingualism and socioeconomic status only.

11. The subtests of the Parent Questionnaire, when used in the regression equations as a triad of separate predictor variables combined, proved to be significant predictors of reading in the presence of the other independent variables, whether in total, in combinations, or taken singly, whereas, the total Parent Questionnaire failed as a predictor, except in the presence of bilingualism only. Thus the three subtests, as a triad, became much more effective predictors of reading than did the total Parent Questionnaire, even adding to prediction beyond the powerful independent variable, socioeconomic status.

VI. CONCLUSIONS

For the sake of convenience, this section is arranged under the order of the statements of hypotheses.

Hypothesis 1

With reference to correlations only, the total Parent Questionnaire did show a statistically significant relationship with reading ($P < .05$), but not to the same degree of intensity as did two of its subtests, experience and books, which both correlated significantly with reading beyond the one per cent level. Unfortunately, the same cannot be said for the other subtest, the Language Questionnaire, which did not correlate significantly with reading.

Using these data as a basis for reasoning, it would appear that the nature and extent of a child's preschool experience, and the accessibility and use of reading materials, coupled with the model of reading set by the child's parents does have a definite bearing on his ability to profit from reading instruction in the first two grades, at least with the sample utilized in this study. Except for restrictions imposed by the limitations of the study, the same could be said of the population. It may be well, then, for parents to become aware of these influences and

to take appropriate action in order to ensure that their child will not become a disabled reader, at least, not for lack of effort on their part in these aspects of reading readiness. It is readily acknowledged, however, that children may fail in reading for a host of additional reasons.

The fact that the Language Questionnaire failed to correlate with reading does not imply that linguistic preparation is unimportant in reading readiness. The literature, as outlined in Chapter II, is too replete with evidence to the contrary. It does mean, however, that this instrument failed to measure those aspects of language development which do facilitate reading achievement. Much has been said already concerning this matter. It might be assumed that the fault is partly built into the instrument, and partly a matter of misinterpretation of the intent of certain of its items.

To illustrate, Item #3 reads, "do children and adults talk to each other during mealtime?", with the range of possible answers following. It is observed that the majority of parents selected one of the two highest value categories, namely, "every day" or "every meal". Furthermore, their answers may have been given in good faith, and likely were even correct, to the extent, at least, that some "table talk" is almost certain to occur between adults

and children during any meal, provided they both are present, of course, if only to request desired food items.

But it would be naive to infer that the amount, type, or quality of the dialogue between those parents and youngsters who ticked off the "every meal" category would be equivalent in any sense of the term. Hence, the "built in" type of error and consequent misinterpretation of intent. According to Bernstein (6, pp. 288-314), and other writers, as noted in the second chapter, the quality and form of linguistic usage assumes vital importance in preparing for academic success. Further reference to these points will be made under Hypothesis 2.

The exceptionally high correlations between reading and each of mental age and socioeconomic status was to be expected as a result of the ample support received in the literature as outlined in Chapter II. These two variables appear to be the real sources of predictive power in this study.

Hypothesis 2

Hypothesis 2, the major hypothesis in this study, postulated no significant contribution to the variance of reading scores by the total Parent Questionnaire. This hypothesis was accepted, indicating no significant

relationship in the presence of the other variables.

In real life there is interplay among many variables which impinge upon the individual to influence his reading achievement, so that relationships derived in the presence of other variables would appear to be the more valid way of viewing the situation. This being true, the finding indicates that, knowing the total Parent Questionnaire scores of the 241 students in the sample, one can make no significantly better prediction of their reading scores than could be made by knowing only their chronological ages, mental ages, degree of bilingualism, socioeconomic status and sex.

In order to find a satisfactory explanation for this apparent anomaly in relationships, recourse was made to the interplay among variables as shown on the correlation matrix. It is a recognized fact, as noted by Guilford (42, pp. 403, 404), that to add significantly to the predictive power of an equation, variables should be chosen which are highly related to the criterion variable and either unrelated or poorly related to each other. In the case of the total Parent Questionnaire, it is noted from Table III that, while being only modestly related to reading (.15), this particular variable was much more highly related to two other predictor variables, bilingualism (-.22)

and socioeconomic status (.41). Thus, in the presence of these two variables, the total Parent Questionnaire did not add significantly to the variance of the reading scores.

It is important to bear in mind that an understanding of the variables investigated in this study utilizing multiple linear regression analysis, must take into account the variables in combination. Again, it could be conjectured, and quite plausibly, that the total Parent Questionnaire and socioeconomic status overlap to an extent in what they measure, thus reducing the uniqueness of the contribution of the total Parent Questionnaire in predicting reading.

Hypotheses 3, 4 and 5

Although the scores of the total Parent Questionnaire did not add significantly to the prediction of reading scores, yet, when this instrument was broken into its component parts, language, experience and books, a notable exception was observed. It was found that, even though the correlation between the Language Questionnaire and reading was not significant, yet the Language Questionnaire, in the presence of the other variables, added significantly to the predictive power of the equation beyond the one per cent level. In other words, it accounted for a portion

of the variance of scores on the reading test in spite of its lack of correlation with reading. The reason for this seeming inconsistency was at first obscure, but investigation into the matter revealed that the Language Questionnaire obviously functioned as a suppression variable.

As pointed out by Guilford,

It would seem, at first thought, that any test that correlates zero with the criterion has no value in predicting that criterion. It is true that alone it has no value whatever for so doing. But it is not true if that test is combined with other tests with which it correlates... Clearly a test with zero validity may add materially to prediction if it correlates substantially with another test that is valid (42, p. 403).

With reference more specifically to the suppression variable, Guilford (42, pp. 403, 404) points out that even though a particular predictor variable, say X(5) in this study, socioeconomic status, may correlate highly with the criterion, it still has some variance in it that correlates zero or even negatively with the criterion. It is this variance, Guilford points out, that prevents X(5) from correlating as highly as it might with the criterion. Predictor variable X(5), socioeconomic status, correlates with X(9), the Language Questionnaire, in this case, because they have in common that variance not shared by the criterion, as Guilford would explain. He also adds that, in this kind of situation, X(9) acquires a negative

regression weight even though it may correlate only zero with the criterion, and not negatively. Such a variable, he explains, is a suppression variable, whose function it is to suppress (or account for) in other independent variables that variance not represented in the criterion, but which may be in some variable that does correlate with the criterion.

It will be noted that the predictor variable, the Language Questionnaire, meets the conditions of a suppression variable. It did not correlate with the criterion, reading. For this reason, it could be expected not to contribute anything to the prediction of reading scores. Yet it did, because it acted as a suppression variable. It correlated highly with socioeconomic status, which, in turn, enjoyed a highly significant correlation with reading. In addition, X(9), the Language Questionnaire, acquired a negative regression weight of -0.208 to comply fully with the conditions outlined by Guilford in assuming the role of a suppression variable.

As for the other two Parent Questionnaire subtests, experience and books, much the same explanation applies as was the case for the total Parent Questionnaire. Although each of these predictor variables correlated more highly with reading ($P < .01$ in each instance) than did the total

Parent Questionnaire ($P < .05$), it is noted that both of them also correlated at or beyond the one per cent level of significance with three other predictor variables, mental age, bilingualism and particularly socioeconomic status. Therefore, as was the case with the total Parent Questionnaire, in the presence of the three variables just mentioned, neither the Experience Questionnaire nor the Books Questionnaire added significantly to the variance of reading scores. Of course, the complex interaction among these variables must be taken into account, in prediction, as previously stated.

Hypothesis 6

With respect to this hypothesis, neither chronological age nor sex made significant contributions to the variance of reading scores in the presence of the other variables, nor did they correlate with reading at a statistically significant level, which is generally consistent with the findings reported in Chapter II, where sex is concerned. Since these variables were included only to effect better statistical control, and because neither of them assumed a major role in the study, no further comments will be made with regards to them except to observe that the sample included an almost equal number of boys and girls.

The two major contributors to the prediction of reading in this study were mental age and socioeconomic status, and they shared an approximate equality of status in this respect. Both of their F values, as determined in multiple linear regression analysis, were very high ($P < .001$) and almost equal. The same is true with respect to their correlations with reading ($P < .01$). Evidence such as this leaves little doubt as to their generally strong influence on reading, which is in agreement with the findings in research as reported in the second chapter.

Meriting some discussion, however, is the measure of a child's bilingual background. Contrary to points of view expressed by Dechant (21, p. 104), Ching (17, p. 22), Timothy (97, p. 236), and Singer (89, p. 457), and to evidence from studies cited by Smith (91, pp. 119-284), Sheldon and Cutts (87, p. 520), and Smith (90, pp. 692, 693) referred to in Chapter II, correlations between bilingualism and reading in this study showed no significant degree of relationship. Perhaps this finding can be attributed to the wide variance of usage of a second language in the bilingual homes included in this sample. It is noted that, in the studies referred to above, the adverse effect of bilingualism upon a child's reading scores was far greater where only one language was spoken at home, which was not

the language of instruction in the child's school. Only a scant few of the students in this study fell into this category, as indicated by the scores on the Hoffman Bilingual Schedule, so that the influence of bilingualism was considerably lessened.

Yet the use of multiple linear regression in this study indicated that bilingualism did make a contribution to the variance of reading scores beyond the one per cent level of significance in the presence of the other variables. Again, the table of multiple correlations (Table III) was consulted for clues as to why this was so.

It will be recalled from Guilford (42, p. 403) that to add significantly to the predictive power of an equation, variables should be chosen which are highly related to the criterion variable, and either unrelated or poorly related to each other. Reference to Table III indicates that the correlation between bilingualism and reading achievement by no means reached statistical significance. On the other hand, it was highly related to the total Parent Questionnaire, socioeconomic status, and all of the questionnaire subtests, language, experience and books. Thus bilingualism failed to meet any of these conditions outlined by Guilford as being requisite to the ability of a variable to add significantly to the predictive power of an

equation. Yet it did, despite evidence to the contrary, enable a better prediction of reading achievement than did having a knowledge of the other variables only. It is necessary, then, to seek an explanation elsewhere.

Referring again to Guilford, "Clearly a test with zero validity may add materially to prediction if it correlates substantially with another test that is valid." (42, p. 403). As stated, bilingualism correlated highly with socioeconomic status, the total Parent Questionnaire, the Experience Questionnaire, and the Books Questionnaire, all of which correlated at levels of statistical significance with reading. However, even though these variables did correlate highly with reading, as Guilford would point out (42, pp. 403, 404), there was still some variance in them that correlated zero, or perhaps even negatively, with the criterion. It is this variance, Guilford would add, that would prevent them from correlating as highly as they might with the criterion. In this case, predictor variable X(3), bilingualism, correlated highly with the other independent variables just mentioned because they had in common that variance not shared by the criterion. Thus, as was the case with the Language Questionnaire, bilingualism also was seen to function as a suppression variable. Evidently, it is for this reason that a knowledge

of bilingualism did enable a better prediction of reading scores, certainly not because of any correlation with reading.

Hypothesis 7

The only changes noted in the predictive ability of the Parent Questionnaire scores, both total and subtest, were that in this case, the Language Questionnaire failed to make a significant contribution to the variance of reading scores, and the Books Questionnaire was even less close to adding to predictability. It is possible that the exclusion of chronological age and sex from the regression equations reduced the interplay among the variables to the extent that the Language Questionnaire and the Books Questionnaire became less effective predictors. But it is much more probable that the difference is attributable to the exclusion of the total Parent Questionnaire and its subtests from the regression equation, as was the case for this hypothesis (see Table VI).

It will be recalled that these variables were all included in the previous regression equations shown in Table V. Moreover, both the total Parent Questionnaire and its subtests, experience and books, were correlated with reading at a statistically significant level. In the former regression analysis, because the Language Questionnaire

correlated highly with these independent variables just referred to, which, in turn, enjoyed statistically significant correlations with the criterion, reading, the Language Questionnaire was in a much more favorable position to meet the conditions of becoming a suppression variable, and hence to add to the predictive efficiency of the regression equation when all of the variables were included. However, in this case, with some of the key variables excluded from the regression equation, the Language Questionnaire correlated significantly only with bilingualism and socioeconomic status, of which only the latter correlated at a statistically significant level with the criterion, reading, thereby reducing considerably the possibility of its operation in the role of a suppression variable. Hence, it appears, the lack of predictability in this case.

Hypothesis 8

It is neither deemed important nor necessary to comment further on the results of this hypothesis.

Hypotheses 9 and 10

As indicated in the preceding chapter, whether in the presence of all the predictor variables, or combinations of predictor variables, or taken singly, the three

questionnaire subtests, as a triad of independent variables combined, increased the predictive efficiency of the regression equations at acceptable levels of significance on all counts.

The total Parent Questionnaire, on the other hand, as a single predictor embodying the sum of the scores of its three subtests, failed to contribute to the variance of reading scores at an acceptable level of significance except in one instance, in the case of bilingualism, which, as already pointed out, itself added to the predictability of the regression equations only by virtue of its role as a suppression variable. This fact, incidentally, offers one possible explanation for the ability of the total Parent Questionnaire to improve the prediction of reading over and above that of bilingualism taken alone. In the first place, the possibility of bilingualism possessing predictive power is ruled out, it being dependent upon its relationships with other independent variables, which, in turn, correlated highly with reading. In the second place, the total Parent Questionnaire was significantly correlated with reading, whereas bilingualism was not, which again lessened its predictive potential.

As for the predictive efficiency of the triad of questionnaire subtests exceeding that of the total Parent

Questionnaire, the explanation appears again to have as a focal point the Language Questionnaire. As previously stated, this variable, in and of itself, did not correlate with reading at a statistically significant level. Therefore it was only reasonable to expect that the language scores, which constituted a large part of the scores of the total Parent Questionnaire, would reduce the efficiency of the latter in predicting reading. Possible reasons for this have already been discussed.

However, when the subtests of the Parent Questionnaire were entered into the regression equation as separate variables, and then restricted as a triad, the predictive efficiency of the equation was improved as the result of the intercorrelations among all of the predictor variables, both with the criterion, reading, and with each other. In the case of this particular triad of predictors, the Language Questionnaire was free to operate as a suppression variable, and thus to increase their predictive power considerably beyond that of the total Parent Questionnaire alone, in a manner closely approximating the explanations given above for suppression variables, both in the case of the Language Questionnaire and bilingualism.

In conclusion, one could ask what this all means. Briefly, it does not mean that linguistic development is

unimportant in the total picture of preparation for initial reading instruction, for reasons already given. It does mean that the language subsection of the focal instrument in the study, the Parent Questionnaire, was unsuccessful in measuring what it was intended to measure, thus failing to reveal the information sought. This knowledge, however, does not entirely discredit the Parent Questionnaire as a useful instrument in detecting certain deficiencies in the reading readiness of young children. There is too much evidence to the contrary. First, the total Parent Questionnaire, the Experience Questionnaire, and the Books Questionnaire all correlated with reading at statistical levels of significance. Second, the triad of questionnaire subtests added to the ability to predict reading achievement under all conditions attempted, even beyond that of socioeconomic status. These factors bespeak some degree of uniqueness in the ability of this instrument to predict reading achievement, and suggest, therefore, that certain conditions in the home do influence a child's preparedness for initial reading instruction.

For the reasons just outlined, parents would be well advised to consider as crucial their child's early developmental years. Adjustments on their part, may be necessary to ensure that, out of the host of potential

causes of reading failure, their child shall not be victimized by reading disability, at least as the result of their neglect to manipulate factors over which they are at liberty to exercise control, and this without a great outlay in cash, necessarily. However, some realignment of spending patterns may become involved. It would be folly to add unnecessarily to the burden of potential reading problems, particularly in view of the possible devastating repercussions in the lives of our future citizens.

VII. IMPLICATIONS

Since many normal students fail to reach their potential reading achievement, and consequently fail academically, and since the causes of reading difficulty are frequently environmental, it becomes the responsibility of educators, as commissioned by society, to devise ways and means to better ensure that the educationally disadvantaged may reach their potential. Since a child's preschool years are found to be crucial in terms of educational preparation, and since these are the years over which the educational system at present has no legal jurisdiction, the question then arises as to whether intervention to offset these deficits in educational pre-

preparation is justified.

In order to find a solution to this problem it is necessary to consider some of the issues involved. Already society has intervened to make attendance at school compulsory in Alberta. Few people object to this on moral grounds. It would seem, therefore, that so long as public intervention on behalf of preschool children was restricted solely to reducing the incidence of subsequent academic failure, by offsetting potent environmental deficits in the early formative years, that this matter should raise few objections in the minds of most parents.

Other issues also merit consideration in ascertaining whether educational intervention is justified. Provided such intervention will, in fact, circumvent a significant number of academic failures through prevention of severe reading deficiencies, it would seem that the repercussions on the economy through increased productivity and other possible contributions would offset any increased cost burdens in the long run. Moreover, if greater academic success will serve to reduce substantially the incidence of serious personal and social maladjustments, and perhaps of consequent crime as the result of gross emotional and/or economic insecurity, again the composite benefit to society would appear to offset the price of neglect. These "ifs",

incidentally, would appear to be distinct possibilities.

If sheer cost is still viewed as involving too great a burden on the taxpayer, then publicly supported kindergartens could be considered on a more limited basis. It is readily acknowledged that not all children require kindergarten experience. Those who come from culturally rich and stimulating homes generally are already prepared for initial reading instruction barring other inhibiting factors, such as physiological anomalies. Kindergarten experience for them may be, in fact, redundant, and thus, perhaps, contribute no more to their educational success than would their own stimulating home environments.

But the same cannot be said, necessarily, of the disadvantaged child. For him an experience in the kindergarten could be richly rewarding in terms of educational preparation, granted an appropriate, stimulating environment. This, of course, implies the necessity of special teacher qualifications to ensure an effective readiness experience for needy preschoolers. Fortunately, such training is at present being offered at the University of Alberta. It also implies that a means of detecting potential culturally generated reading disability cases be firmly established, which, in itself would necessitate some considerable attention. There is no logical reason, however,

that devices could not be developed which are equally as effective as those at present utilized to screen reading readiness defects in prospective first-grade beginners. Scant educational value would accrue through returning an already disadvantaged youth to a home devoid of the needed stimulation for an additional year of restrictive confinement.

Because of the very close relationship established in this study between socioeconomic status and reading achievement, provision for the education of parents of young children, and even prospective parents, on a voluntary basis, is a further possibility worth exploring. Many are no doubt unaware of specific steps they could take to help prepare their child for school, not to mention the dividends which accrue through appropriate emotional settings. Arrangements for such an undertaking would appear to be an appropriate function of the existing Home and School organizations. Such a venture would not need entail great expenditures in terms of time or money, and the value of equipping parents with concrete ways and means of helping to prepare their children for school can hardly be disputed. Even priorities on family purchases could be affected to good advantage.

It would be folly to assume that kindergartens, even

good ones, could totally compensate for all culturally generated academic deficits, or erase all of the consequent debilitating emotional overtones emerging from a disadvantaged environment. For this reason, it becomes the responsibility of the school system, also in its present sphere of operation, to make needed adjustments and special provisions in terms of suitable programs, methods of instruction, materials, and emotional climate, and thus to fulfill its commitment to provide for the education of each and every individual, according to his own needs and up to his maximum potential, insofar as it is capable of doing so.

As for what can be done in the homes, the kindergartens, or at school to counteract or compensate for these deficits, a few concrete suggestions arise from a study of the items of the Parent Questionnaire and from the literature.

Since competence in reading, which is a receptive language process, cannot logically supersede general linguistic capability, then it would seem feasible to exploit every available means within economic reach to develop linguistic facility among preschool children. Mealtimes particularly could be utilized for stimulating conversation. (This might entail some forethought and

preparation, on occasion, even as does the preparation of a formal lesson.) Various sorts of listening experiences could also be provided, such as stories read and told, selected children's recordings, which are available from public libraries, or radio plays and suitable television productions. Each of these media would obviously be best exploited with pre- and post-discussions, and with the use of visual aids where beneficial.

Since varied experiences provide the raw materials for concept formation and for reaction with meaning to the printed page, it would seem advisable to utilize every economically feasible possibility to broaden a child's scope of experience. No community is entirely devoid of rich sources of varied experiences. But the exploitation of such facilities would require imagination and ingenuity. Again, any potential experience of educational merit could only be intensified with the injection of preparatory, concurrent, and post-experience discussions which would better enable the child to discriminate differences in what he sees, to formulate generalizations about the classifications of objects or events in the environment, to discover relationships or causes and effects, and hence to add to his urgently needed stockpile of concepts.

The provision of widely varied and interesting books

and other appropriate reading materials is no longer an insoluble problem, at least in urban areas, where public library facilities make these materials available at practically no cost to the individual, above taxes, which he pays anyway. Moreover, were parents made fully aware of the value of serving as reading models to their children, and of the possible repercussions of neither setting such an example nor making any provision for their children to read, no doubt a substantial number, who at present are negligent in this regard, would make the necessary adjustments. Moreover, if they were convinced of the value of certain educational toys and games, and that the use of certain inexpensive materials can help to build eye-hand coordination, important particularly in beginning reading and writing, slight adjustments in spending priorities would cater as much as possible to these needs. Few parents are not interested in their children's welfare, and will do whatever they can, as means permit, to ensure their children's success.

VIII. SUGGESTIONS FOR FURTHER RESEARCH

If the disadvantaged child is to be identified early enough to permit educators to compensate adequately for his academic deficits before he enters the first grade, then

effective, practical, and legally authorized means of detection will have to be devised. Such a venture would appear to be of undisputed value, and could be the object of considerable research. Further study is warranted also in the matter of remediation to offset the existing effects of environmental deficits.

Furthermore, if much of the educational offering is, in fact, irrelevant to many of the culturally handicapped, as it is alleged to be, then investigation into what does motivate and make sense to them, which would also lead to desirable educational ends, would undoubtedly have merit. Experimentation with such materials and methods as appeared to be useful would provide a natural subsequent activity. The information gained from such research could be used in bridging the gap between the experience of culturally disadvantaged children and the classroom.

Since the Parent Questionnaire, devised by the investigator to assess the effect on reading achievement of certain early childhood experiences, proved to have inherent weaknesses, particularly, it seems, in the language subtest, an attempt to revise and refine this instrument to permit more valid investigation into the areas under question could constitute further research.

A study in depth could be undertaken to determine some

of the sex-linked educational deficits of boys and girls reared in disadvantaged homes. Such a study could help to pave the way for the differential treatment of boys and girls who come from such environments.

Somewhat less related to the central theme of this study, but nevertheless of some considerable importance to educators in this age of international human mobility, it would seem worthwhile to attempt to determine, through research, what practical steps could be taken to hasten the acquisition of the English language by those students facile only in a foreign tongue, and hence to equip them sooner and more fully to profit from instruction in the language of the school.

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APPENDICES

APPENDIX A.

THE PARENT QUESTIONNAIRE

AND COVER LETTERS

PARENT QUESTIONNAIRE

DIRECTION: Place a check mark (✓) on the line before the one answer in each item which, in your best judgment is most nearly correct. (It is not practical to cover every possible category in the range of answers. For this reason, select the one answer which is most nearly correct in your case.) It is most important that you answer every item.

1. Does your family eat together?

never once a month once a week once a day every meal

2. Do you talk during meals at your home?

never once a month once a week once a day every meal

3. Do the children and adults talk to each other during mealtime?

never once a month once a week once a day every meal

4. Does your child talk to you about his activities during the day?

_never _once a month _once a week _most days _every day

5. Sometimes children have trouble saying in words just what they mean. Do you help your child with such difficulties?

☐_never ☐_once a month ☐_once a week ☐_once a day ☐_several
times each
day

6. Most children, being curious, ask a lot of questions. Do you get a chance to answer your child's questions?

_never _once a month _once a week _once a day _several
times each
day

7. Did you tell children's stories to your child in the years before he (she) began the first grade?

☐ never ☐ about one story each month ☐ about one story each week ☐ about one story each day ☐ several times each day

8. (a) About how long does your child watch television on the average day?

☐ not at all ☐ $\frac{1}{2}$ hour ☐ one hour ☐ $1\frac{1}{2}$ hours ☐ 2 hours

(b) About how much of this time each day does he (she) watch programs intended for children?

☐ none ☐ $\frac{1}{2}$ hour ☐ one hour ☐ $1\frac{1}{2}$ hours ☐ 2 hours

(c) Does he (she) watch television more during the school term or in summer holidays?

☐ during the school term ☐ in summer holidays

9. Do you talk about any of these programs with your child?

☐ never ☐ discuss about one program each month ☐ discuss about one program each week ☐ discuss about one program each day ☐ discuss several programs each day

10. Did you read children's stories to your child in the years before he (she) went to school?

☐ never ☐ read about one story each month ☐ read about one story each week ☐ read about one story each day ☐ read several stories each day

11. In the years before He (she) went to school, did your child have and use at home materials such as pencils, paper, crayons, and scissors?

☐ never ☐ about once each month ☐ about once each week ☐ about once each day ☐ several times each day

12. Does your child go with the family or friends on trips or vacations?

never once since birth every other year every year two times a year or more

13. Has your child been to the following places of interest?

(a) a zoo never one to three time once a year or more

(b) a game farm never one to three times once a year or more

(c) the planetarium

never one to three times once a year or more
(d) a circus or rodeo never one to three times once a year or more

(e) an airport, bus depot or railway station

never one to three times once a year or more
(f) a farm, a lake or camping

never one to three times once a year or more
(g) a bakery, firehall or newspaper plant

never one to three times once a year or more

(h) other special places of interest

never one to three times once a year or more

14. Does your child help to plan family picnics, outings or vacations?

never about once a year about once a month about two times a month usually every week

15. Does your child play games of skill such as cards, chess or checkers?

never 3 or 4 times once a month once a week almost daily
 each year

16. In the past, has your child enjoyed listening to children's records?

never about once about once 2 or 3 times one or more
 a month a week a week times a day

17. About how many books are there in your home?

20 or less about 50 about 100 about 150 200 or more

18. About how many of these books are children's books (story books or reference books)?

5 or less about 15 about 25 about 50 100 or more

19. (a) Do you buy newspapers or magazines from the newstand?

never 3 or 4 times about once about once almost daily
 a year a month a week

(b) Do you subscribe to magazines or newspapers?

none one two three four or more

20. (a) Does your child buy magazines from the newstand?

never 3 or 4 times about once about once several times
 a year a month a week each week

(b) Does your child subscribe to children's magazines?

none one two three four or more

21. Does your child read in his (her) spare time?

☐_no ☐_yes

(a) About how long did he (she) read yesterday?

☐_not at all ☐_10 minutes ☐_25 minutes ☐_40 minutes ☐_one hour
or more

(b) About how long did he (she) read last week?

☐_not at all ☐_one hour ☐_2 hours ☐_3 hours ☐_5 hours or more

(c) Does your child use more spare time for reading during
the summer holidays or while going to school?

☐_during summer holidays ☐_while going to school

22. Do you do any reading? Mother. . . ☐_no ☐_yes

Father. . . ☐_no ☐_yes

(a) About how long did you read yesterday?

Mother. . .

☐_not at all ☐_10 minutes ☐_25 minutes ☐_40 minutes ☐_one hour
or more

Father. . .

☐_not at all ☐_10 minutes ☐_25 minutes ☐_40 minutes ☐_one hour
or more

(b) About how long did you read last week?

Mother. . .

☐_not at all ☐_one hour ☐_2 hours ☐_3 hours ☐_5 hours or
more

Father. . .

☐_not at all ☐_one hour ☐_2 hours ☐_3 hours ☐_5 hours or
more

TABLE XIII
PARENT QUESTIONNAIRE
ITEM NUMBERS INCLUDED IN SUBTESTS
AND ASSIGNED VALUES

Language Subtest (Item Number)	Maximum Numerical Value	Experience Subtest (Item Number)	Maximum Numerical Value	Books Subtest (Item Number)	Maximum Numerical Value
1	4	11	4	17	8
2	8	12	8	18	12
3	8	13	16	19	4
4	8	15	4	20	8
5	8		-----	21	12
6	8			22	8
7	8	Total	32 (16%)	23	8
8	4			24	8
9	8				-----
10	12			Total	68 (34%)
14	4				
16	12				
25	8				
Total	----- 100 (50%)				
				Total Value	----- 200(100%)
					169

Department of Elementary Education
Faculty of Education
University of Alberta
Edmonton, Alberta
August, 1966

To the parents or guardians of children who have just completed the second year of school:

As you will recall, shortly before school closed for the summer holidays you helped your child complete two forms which were sent to you through the schools. Your help was greatly appreciated. A copy of the letter you received at that time is attached to this Sheet. In that letter I stated that you would receive another questionnaire as part of the present study. This is the questionnaire included with this letter. Incidentally, it will be the last form I will send to you.

Much thought and care has gone into the preparation of this questionnaire, which is really the "heart" of the whole study. Without the information asked for in this questionnaire, the entire study will be of no value, whatsoever, to anyone. On the other hand, if the items are all answered accurately, the results may greatly help both teachers and parents of young children who are in their formative years. (See the attached letter.)

I sincerely trust that you will again assist in this research, as you did in June, by completing the enclosed questionnaire correctly to the best of your knowledge. Again, I assure you that no one but the researcher (myself) will see any personal information you give. It will be kept in strictest confidence.

Thank you so very much for your valuable assistance. It would be appreciated if you would complete and return the questionnaire at your earliest convenience (preferably in the next day or two) in the enclosed envelope, which is already stamped and addressed.

Sincerely yours,

H. V. Lowry (Mr.)

Department of Elementary Education
Faculty of Education
University of Alberta
Edmonton, Alberta

Notice to parents or guardians of children in the second year of school:

This letter is being sent to you to explain briefly about a research project I am engaged in and ask for your assistance. I have taught in the Edmonton Public School system for several years. At present I am a graduate student at the University of Alberta doing research in reading. I want to learn how certain facts about a child's early home life help, or perhaps hinder, his progress in reading. Such information should be most useful to both parents and teachers of young children.

There is a good deal of evidence that failure in reading often leads to serious personality problems. Furthermore, a pupil's progress in school largely depends upon his ability to read well. Unfortunately, some of our students do not read well enough to complete their schooling. For these reasons, it is important to learn about every possible cause of reading difficulty so that corrective measures may be taken.

There are many possible reasons why some pupils find learning to read rather difficult. Researchers are constantly

trying to discover these problems and to overcome them. The experience a child has at home before beginning the first grade at school could only account for a fraction of his success or failure in reading, but surely an important fraction.

Many parents wonder what they can do to help prepare their child to learn to read. Much is already known. But surely we shall not find all the answers unless we are honestly willing to take a long, hard look at ourselves as parents, and at what we are doing to help prepare our children to learn to read. Research can make a definite contribution toward solving this problem. Since I have six children of my own, you can better understand my keen interest in this matter.

I solicit your help. Will you please assist in this research by helping your child to complete correctly the enclosed forms? I assure you that any personal information you give will be kept strictly confident. No one will see it but myself. An additional questionnaire will be sent to you later as part of the present study, accompanied by further explanation.

I consider this research to be of vital importance to both parents and teachers, and I hope most parents will want to help. If you feel that you cannot be of help please

return the incomplete forms. Simply seal the forms in the envelope provided and send them back to school with your child, by tomorrow if possible, please.

Thank you kindly.

Sincerely yours,

H. V. Lowry

APPENDIX B.

THE GOUGH HOME INDEX AND
THE HOFFMAN BILINGUAL SCHEDULE

HOME INDEX QUESTIONNAIRE

1. Name: _____
 (Last Name) (First Name)
2. Father's Occupation: _____
 (Be Clear. For example: Sales clerk at Eatons,
 door-to-door salesman for Fuller Brush, travelling
 salesman for Massey-Ferguson.)
3. Mother's Occupation: _____

DIRECTIONS: In the following questions, mark your answer by putting a circle in the right place. For example, in the question "Does your family own a car?" draw a circle around the Yes if your family does own a car, and around the No if it does not. Be sure to answer all the questions.

1. Does your family own a car? Yes No
2. Does your family have a garage or carport?. . . . Yes No
3. Did your father go to high school?. Yes No
4. Did your mother go to high school?. Yes No
5. Did your father go to university? Yes No
6. Did your mother go to university? Yes No
7. Is there a writing desk in your home? Yes No
8. Does your family have a Hi-Fi or record player? . Yes No
9. Does your family have a piano?. Yes No
10. Does your family get a daily newspaper? Yes No
11. Do you have your own room at home?. Yes No

12. Does your family own its home? Yes No
13. Is there an encyclopedia in your home? Yes No
14. Does your family have more than 100 hard-cover
books? (e.g. 4 shelves 3 feet long) Yes No
15. Did your family borrow any books from the library
in the last year? Yes No
16. Does your family leave town each year for a
holiday? Yes No
17. Do you belong to any club where you have to pay
fees? Yes No
18. Does your mother belong to any clubs or organizations
such as study, church, art, or social clubs? . . . Yes No
19. Does your father belong to any such clubs or
organizations? Yes No
20. Have you ever had lessons in music, dancing, art,
swimming, etc, outside of school? Yes No

HOFFMAN BILINGUAL SCHEDULE

Total _____
Ans'd _____
Score _____

Name _____
(Last) (First)

Boy or Girl _____

Does your Father understand English? _____ Your Mother?

Name all other Languages your Father understands _____

Name all other Languages your Mother understands _____

Name all Languages You understand (besides English)_____

MEASUREMENT OF BILINGUAL BACKGROUND

1. Do the following speak to you any language other than English?
- (a) Father never sometimes often mostly always
- (b) Mother never sometimes often mostly always
- (c) Grandfather never sometimes often mostly always
- (d) Grandmother never sometimes often mostly always
- (e) Brothers and never sometimes often mostly always
Sisters
- (f) Relatives never sometimes often mostly always

2. Do you speak to the following any language other than English?
- (a) Father never sometimes often mostly always
 - (b) Mother never sometimes often mostly always
 - (c) Grandfather never sometimes often mostly always
 - (d) Grandmother never sometimes often mostly always
 - (e) Brothers and never sometimes often mostly always
Sisters
 - (f) Relatives never sometimes often mostly always
3. Does your Father speak to the following any language other than English?
- (a) Mother never sometimes often mostly always
 - (b) Brothers and never sometimes often mostly always
Sisters
4. Does your Mother speak to the following any language other than English?
- (a) Father never sometimes often mostly always
 - (b) Brothers and never sometimes often mostly always
Sisters
5. Do your Brothers and Sisters speak to the following any language other than English?
- (a) Father never sometimes often mostly always
 - (b) Mother never sometimes often mostly always
6. Do the following read any newspapers in a language other than English?
- (a) Father never sometimes often mostly always
 - (b) Mother never sometimes often mostly always
 - (c) You (Yourself) never sometimes often mostly always

Write the names of the newspapers in a language other than English which any of the above read on these lines_____

7. Do the following read any books in a language other than English?

(a) Father never sometimes often mostly always

(b) Mother never sometimes often mostly always

(c) You (Yourself) never sometimes often mostly always

Write the names of the books in a language other than English which any of the above read this past year on these lines_____

8. Do the following write any letters in a language other than English?

(a) Father never sometimes often mostly always

(b) Mother never sometimes often mostly always

(c) You (Yourself) never sometimes often mostly always

9. Are letters written in a language other than English received in your home?.. never sometimes often mostly always

10. Do the following attend lectures given in a language other than English?

(a) Father never sometimes often mostly always

(b) Mother never sometimes often mostly always

(c) You (Yourself) never sometimes often mostly always

11. Do the following attend the theatre where plays are given in a language other than English?

(a) Father never sometimes often mostly always

(b) Mother never sometimes often mostly always

(c) You (Yourself) never sometimes often mostly always

12. Are radio programs which are given in a language other than English listened to in your home?

never sometimes often mostly always

13. Do you do your thinking in a language other than English?

never sometimes often mostly always

14. Are there any books in a language other than English in your home?

none some many most all

B29883